

Specification for

**Harmonized system of
quality assessment for
electronic
components —
Electrical relays —
Blank detail
specification —**

**Electromechanical all-or-nothing
relays — Test schedules 1, 2 and 3**

Amendments issued since publication

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Contents

	Page
National foreword	ii
<hr/>	
Section 1. General	
1 Scope	1
2 Object	1
3 Related documents	1
4 Diversity of detail specifications	1
5 Identification of detail specifications	1
6 Test schedules in detail specifications	1
7 Non-harmonized test procedures	1
8 Altered test procedures	1
9 Quality conformance inspection	2
10 Qualification approval tests	2
<hr/>	
Section 2. Contents of detail specifications	
11 General requirements	2
12 Symbols	2
13 Front page	3
14 Related documents	4
15 Characteristic values	4
16 Formation of inspection lots	4
17 Intervals between tests	4
18 Qualification approval	4
19 Quality conformance inspection	4
20 Marking of relays and packages	5
21 Test schedules	6
<hr/>	
Table I — Test schedule 1 Quality conformance inspection requirements	6
Table II — Test schedule 1 Qualification approval procedure requirements	11
Table III — Test schedule 2 Quality conformance inspection requirements	12
Table IV — Test schedule 2 Qualification approval procedure requirements	19
Table V — Test schedule 3 Quality conformance inspection requirements	21
Table VI — Test schedule 3 Qualification approval procedure requirements	29
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National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Committee. It is identical with IEC Publication 255-19-1 (QC 160101) “*Electrical relays — Part 19: Blank detail specification: Electromechanical all-or-nothing relays of assessed quality. Test schedules 1, 2 and 3*”, published in 1983 by the International Electrotechnical Commission (IEC).

This standard is a harmonized specification within the IECQ system of quality assessment for electronic components.

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

Cross-references

International Standards*	Corresponding British Standards
	BS 2011 <i>Basic environmental testing procedures</i>
IEC 68-1:1982	Part 1.1:1983 <i>General and guidance</i> (Identical)
IEC 68-2-10:1984	Part 2.1J:1985 <i>Test J. Mould growth</i> (Identical)
	BS 5992 <i>Electrical relays</i>
IEC 255-0-20:1974	Part 1:1980 <i>Specification for contact performance of electrical relays</i> (Identical)
IEC 255-1-00:1975	Part 2:1980 <i>Specification for all-or-nothing relays</i> (Identical)
	BS QC 160000 <i>Harmonized system of quality assessment for electronic components. Electrical relays. Generic specification: Electromechanical all-or-nothing relays</i>
IEC 255-7:1978	Part 1:1987 <i>Test and measurement procedures</i> (Identical)
IEC 255-10:1979	Part 2:1987 <i>Quality assessment procedures</i> (Identical)
IEC 255-19:1983 (QC 160100)	BS QC 160100:1987 <i>Harmonized system of quality assessment for electronic components. Electrical relays. Sectional specification: Electromechanical all-or-nothing relays</i> (Identical)
IEC 443:1974	BS 5148:1975 <i>Method for specifying the performance of stabilized power supply apparatus</i> (Technically equivalent)
ISO 2015:1976	BS 4760:1971 <i>Specification for numbering of weeks</i> (Technically equivalent)

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 30 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. General

1 Scope

This blank detail specification applies to electromechanical all-or-nothing relays, test schedules 1, 2 and 3 of assessed quality.

2 Object

This blank detail specification gives the tests to be used and the layout to be followed when preparing detail specifications for electromechanical all-or-nothing relays. The test schedules are defined, and the relationship to each other is described in the sectional specification for such relays in IEC Publication 255-19 which selects appropriate tests from IEC Publication 255-7 in accordance with IEC Publication 255-10.

3 Related documents

IEC Publication 68-1, *Basic Environmental Testing Procedures — Part 1: General and Guidance*.

IEC Publication 255-7, *Electrical Relays — Part 7: Test and Measurement Procedures for Electromechanical All-or-nothing Relays (Generic specification)*.

IEC Publication 255-10-10, *Application of the IEC Quality Assessment System to All-or-nothing Relays*.

IEC Publication 255-19-19, *Sectional Specification for All-or-nothing Relays of Assessed Quality*.

IEC Publication 443, *Stabilized Supply Apparatus for Measurement*.

ISO Standard 2015, *Numbering of weeks*.

Any document to which direct reference is needed and which is not quoted elsewhere.

4 Diversity of detail specifications

One detail specification shall only cover structurally similar relays (see IEC Publication 255-19).

5 Identification of detail specifications

Identification of each detail specification shall be provided by an IEC number, date of issue and, regarding the test schedules, in accordance with IEC Publication 255-10.

6 Test schedules in detail specifications

Test schedules shall, as a minimum, contain the tests marked as mandatory (M) in Section 2 of this specification, considering the properties of the relay concerned, its contact category, and the notes in Appendix B of IEC Publication 255-10 and Appendix A of IEC Publication 255-19. The test procedures may be extended, and tests marked as recommended (R) may be added. Tests not listed in Appendix B of IEC Publication 255-10 may be added either from, or in addition to the generic specification, and such tests may be altered if necessary, under the conditions of Clauses 7 and 8.

Any test or test procedure laid down in a detail specification shall be mandatory for the relay(s) covered by that specification.

7 Non-harmonized test procedures

At the discretion of National Committees or other standards-issuing authorities, detail specifications may contain tests beyond those specified in IEC Publication 255-7 (generic specification).

Such tests shall be clearly indicated as non-harmonized and their description and layout shall follow those of the harmonized tests.

8 Altered test procedures

If the technical requirements of the generic specification relative to inspection are not entirely suitable (either for technical reasons or because of special application) to the relay described in the detail specification, the latter shall set out clearly the various amendments which are to be made to these requirements.

9 Quality conformance inspection

Test schedules 1, 2 and 3 for quality conformance inspection are contained in Table I, Table III and Table V respectively. The order of the tests within the sub-groups of these tables should, in general, be appropriate for their sequence when performed, but the detail specification shall specify the mandatory order considering the nature of the relays to be tested. Tests to be added to those listed in Table I, Table III and Table V shall be arranged in the suitable group and sub-group, and at the appropriate place within such sub-group.

When assigning IL- and AQL-notations, the IL values given under the heading of each sub-group shall be used, and the AQL values shall be within the given range.

10 Qualification approval tests

When Method 1 of Clause 4 of IEC Publication 255-10 applies, the test schedules shall be as shown in Table II, Table IV and Table VI of the present specification and shall be consistent with that used for quality conformance inspection.

The detail specification shall also state the sample size and the associated permissible number of defectives. The entries in Table II, Table IV and Table VI indicate minimum sample sizes, taking into account that the confidence in the results of the qualification approval tests cannot only be derived from statistical considerations but should also pay regard to the overall technical information and the cost involved in the tests. A minimum sample size of five specimens per test group plus one specimen for replacement of one defective relay, i.e. acceptance on one defective relay, may be appropriate in most cases to form sample groups, while the total of all samples will be subject to some basic tests on a miss-free basis. For example in Table 11, Table 18 specimens will be required for the “all samples” test which are divided into five plus one specimens each in three sample groups.

If this minimum sample size is not deemed sufficient, sampling plans from IEC Publication 410 shall preferably be used, and the limiting quality of the sampling plan shall be considered for agreement between manufacturer and purchaser.

Other relations between the sample size and allowed number of defectives of qualification approval tests versus the criteria of quality conformance inspection may be considered and specified in the detail specification.

Section 2. Contents of detail specifications

11 General requirements

Detail specifications shall comply with the requirements given below and the tables in them shall be completed in accordance with the entries in the tables in this specification. Where relevant, the entries should take account of Section 1 of this specification and the appropriate clauses of IEC Publications 255-7 and 255-10. It should be understood that writing a detail specification is the task of an engineer who is well aware of these specifications and of the relays he has to specify.

12 Symbols

The symbols in front of the lines of the columns for conditions of test and performance requirements denote, in accordance with IEC Publications 255-7 and 255-10:

- M: mandatory test
- R: recommended test
- M, R: as above, but see restrictions in IEC Publications 255-7 and 255-10
- +: state if required
- ×: state if applicable

13 Front page

The entries on the front page shall be as follows. The circled numbers correspond to those in the layout of Sub-clause 13.4.

13.1 Identification of the detail specification

- ① The name of the National Standards Organization under whose authority the detail specification is drafted.
- ② The IEC number of the relevant blank detail specification.
- ③ The number and issue of the national generic specification.
- ④ The national number of the detail specification, date of issue and further information required by the national system.

13.2 Identification of the component

- ⑤ A short description of the type of relay as necessary for its identification.
- ⑥ Information on its particular construction (where applicable).
- ⑦ Outline drawing and/or reference to the relevant document for outlines. Alternatively, this drawing may be given in an appendix to the detail specification.
- ⑧ Application and test schedule.

NOTE The order of ranking of the test schedules is as given in Clause A.1 of Appendix A of the sectional specification, IEC Publication 255-19.

- ⑨ Reference data of the most important properties.

13.3 Example of reference data, presentation is optional

Reference data

This information is not for inspection purposes.

1) Coil

Coil voltage (V d.c.)	Number of turns	Resistance at 20 °C (Ω)	Test voltage (kV)	Coil variant code
6	545	3.1	2.5	70
12	1 090	14.7		71
24	2 180	58		72
220	20 000	5 000		78

2) Contacts

Type	Continuous contact current (A)	Open-circuit voltage (V)	Make/break power (W)	Test voltage (kV)	Contact code
1 make	15	440 = / 380 ~	1 000 = /2 200 ~	2.5	1A
2 make	10		600 = /1 500 ~		2A
1 change-over	10				1C
2 change-over	10		2C		

3) Temperature range: 0 °C ... + 40 °C

13.4 Layout of the front page of detail specifications

①	Page: Of:	IEC Issue 1	②
③			④
DETAIL SPECIFICATION FOR: ALL-OR-NOTHING RELAY TYPE(S): CONSTRUCTION:			⑤
⑦	(Outline drawing)	Application:	⑧
			⑥
<i>Reference data</i> This information is not for inspection purposes.			⑨
Test schedule: × (or × with additions)			

14 Related documents

14.1 IEC Publication 255-7, and further publications referenced therein (state, as appropriate, further related documents).

15 Characteristic values

(state in accordance with IEC Publication 255-1-00)

16 Formation of inspection lots

(state as applicable)

17 Intervals between tests

(state for Group C)

18 Qualification approval

(state Method 1 or 2 of Clause 4 of IEC Publication 255-10 and, in the first case, refer to Table II, Table IV or Table VI respectively)

19 Quality conformance inspection

19.1 With the exception of Sub-group A0, where a sub-group contains more than one test, the order of tests is mandatory.

19.2 Samples subjected to destructive tests (D) shall not be released for delivery.

20 Marking of relays and packages

Relays and their packages supplied in accordance with this detail specification shall be marked as follows:

20.1 Relay

- trade mark or manufacturer's name
- relay type code
- coded date of manufacture, at least to the nearest month, in accordance with ISO Standard 2015 if appropriate
- (any further necessary marking)

20.2 Packages

- detail specification reference
- trade mark or manufacturer's name
- relay type code
- manufacturer batch identification code
- quantity
- (any further necessary marking)

21 Test schedules

Table I — Test schedule 1 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Quality conformance inspection Requirements</i>					
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified					
		From Sub-clause 16.7 of IEC Publication 255-7 state + 1) Atmospheric conditions + 2) Properties of supply and connections + 3) Cleaning and/or adjustment before test 4) Fixing instructions + 5) Application of these conditions			1) See IEC Publication 68-1 2) See IEC Publication 443
Group A inspection		<i>General case</i>	<i>Special case</i>		
<i>Sub-group A0</i> For all tests in this sub-group		100 %-test	IL: ...	II AQL: 0.065 ... 0.25 ... 0.65	
1	Visual inspection, marking	M 17.4 1) and 2)	...	...	Present and legible
2	Functional tests	M State from 24.3: 1) operate and release value, preconditioning, polarity 5) test on new relays + 6) magnetic orientation × 7) details of monitoring	...	...	Correct functioning
3	Dielectric test	M State from 20.2: 1) terminals 2) voltage parameters 3) duration	...	...	No breakdown, no flashover + maximum leakage current
4	Sealing	M State from 31.2.2: 1) method 3) pressurizing and cleaning × 4) details of Method 3	...	...	Method 1: no visible leakage Methods 2 and 3: maximum leakage rate
<i>Sub-group A1</i> For all tests in this sub-group			IL: ...	I AQL: 0.4 ... 1.0 ... 4	
5	D.C. coil resistance	M State from 19.1.3: + 2) reference temperature × 3) temperature coefficient × 4) precautions	I	...	Resistance limit(s) of the coil(s)
6	Coil impedance	M State from 19.3.3: 1) method 3) energization value(s) + 4) test voltage + 5) alternative procedure	I	...	Impedance or burden limits
7	Functional tests	M State from 24.3: Test No. ②	I	...	Correct functioning
<i>Sub-group A2</i> For all tests in this sub-group			IL: ...	S 4 AQL: 0.4 ... 1.0 ... 4	
8	Check of dimensions	R State from 17.7: 1) dimensions + 2) creepage distances and clearances	S 4	...	Tolerances
Symbols and circled numbers, see Clauses 12 and 13.					

Table I — Test schedule 1 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Sub-group A3</i> For all tests in this sub-group			IL: II		
			AQL: 0.4 ... 1.0 ... 4		
9	Visual inspection other than marking	M State from 17.7: + 3) visual conditions + 4) shaking of the relay a) 5) correct housing b) + other physical properties c)	II	...	a) no audible noise ^a b) condition, finish and workmanship to be satisfactory c) state details of results
Group B <i>Sub-group B2</i> For all tests in this sub-group			IL: S 3		
			AQL: 0.4 ... 1.0 ... 4		
10	Internal moisture	R State from 32.4: 1) energization value 2) temperature	S 3	...	None, but final measurements apply
11	Solderability Test I (D)	M State from 36.4: 1) method + 2) ageing procedure	S 3	...	None, but final measurements apply
12	Final measurements	State the appropriate conditions and performance requirements applicable to the tests above, from the following:			
	— visual inspection	State from 17.7: + 3) visual conditions properties to be checked a) marking and identification b) correct housing × c) solder wetting	Same AQL as for the test above	...	a) present and legible b) condition to be satisfactory c) wetting index
	— d.c. coil resistance	State from 19.1.3: Test No. ⑤			Resistance limit(s) of the coil(s)
	— other final measurements	+ State all conditions			State required results
Group C IL and AQL are given here only as a guide. Instead of IL and AQL values, the detail specification shall indicate for each sub-group: 1) Periodicity of tests 2) Number of relays to be tested 3) Number of defectives allowed <i>Sub-group C2</i> For all tests in this sub-group					
			IL: S 3		
			AQL: 0.4 ... 1.0 ... 4		
13	Dielectric test	M State from 20.2: Test No. ③ Terminals not tested in A0	S 3	...	No breakdown, no flashover + Maximum leakage current
<i>Sub-group C3</i> For all tests in this sub-group			IL: S 2		
			AQL: 0.65 ... 1.5 ... 6.5		
14	Check of dimensions	R State from 17.7: 1) dimensions (only from those not yet checked in A2) + 2) creepage-distances and clearances	S 2	...	Tolerances
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table I — Test schedule 1 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Sub-group C4</i> For all tests in this sub-group		IL: S 2 AQL: 0.4 ... 1.5 ... 6.5			The tests of this sub-group are destructive (D)
15	Electrical endurance (D)	<p>℞ State from 41.3, 41.4, 41.5, 41.6 as applicable:</p> <p>For 41.3 (Categories I, II, III) State from 41.3.2: contact(s) to be tested 1) number of operations or duration 2) Method 1 or 2 + 4) checking intervals for Method 2 + 6) temperature 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment and fuse rating 11) load(s)</p> <p>For 41.4 (Category 0) State from 41.4.2: contact(s) to be tested 2) energization value 3) speed and duty factor 4) number of operations or duration 5) contact circuit resistance, state from 23.2: (see Test No. (16)) + 6) temperature + 7) intermediate measurements; state all conditions</p> <p>For 41.5 (Category 0, miss-free) State from 41.5.2: contact(s) to be tested 1) energization value 2) number of operations 3) speed and duty factor 4) contact circuit resistance, state from 23.2: (Test No. (16)) + 5) intermediate measurements; state all conditions</p> <p>For 41.6 (extended assessment) state all information required in IEC 255-0-20. Sub-clause 5.2.1.2</p>	S 2	...	<p>Method 1: allowed number of failures, criteria of failure</p> <p>Method 2: criteria of failure</p> <p>Allowed number of failures, the criteria being:</p> <p>Maximum contact circuit resistance</p> <p>Intermediate measurements: state required results</p> <p>Maximum contact circuit resistance</p> <p>Intermediate measurements: state required results</p> <p>State required results</p>
16	<p>Final measurements</p> <p>— insulation resistance</p> <p>— contact circuit resistance</p> <p>— other final measurements</p>	<p>State the appropriate conditions and performance requirements applicable to the tests above, from the following:</p> <p>State from 22.2: 1) terminals + 2) measurement voltage + 3) time to reading</p> <p>State from 23.2: + 1) frequency of test voltage 2) type of measurement × 3) details of dynamic test + 4) energization value 5) points of measurement 6) test current 7) open circuit voltage</p> <p>+ State all conditions</p>	Same AQL as for the test above	<p>Minimum value(s) of insulation resistance</p> <p>Maximum contact circuit resistance</p> <p>State required results</p>	
Symbols and circled numbers, see Clauses 12 and 13.					

Table I — Test schedule 1 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Sub-group C5</i>		IL: S 2			
For all tests in this sub-group		AQL: 0.4 ... 1.0 ... 4			
This sub-group contains destructive tests as marked by a (D)					
17	Damp heat, steady state (D)	R 27 and 22, state from 27.3: 1) duration, recovery + 2) voltage and for immediate final measurement, state from 22.2: Test No. (16)	S 2	...	None, but final measurements apply Minimum value(s) of insulation resistance
18	Climatic sequence (D)	R 27 and 22, state if 26.3, 26.5 and/or 26.6 are to be applied	S 2	...	
		(Dry heat) State from 26.9: 1) severity, recovery 2) energization value, duty and contact load 3) see also 24.3 1) operate and release value + 7) details of monitoring			Additionally, final measurements apply Correct functioning
		(Damp heat) State from 26.9: 1) severity, recovery and, for immediate final measurements after the last cycle of 26.6 state from 22.2: Test No. (17)			None, but final measurements apply Minimum value(s) of insulation resistance
		(Cold) State from 26.9: 1) severity, recovery 5) method 6) operating test requirements, as follows:			Additionally, final measurements apply
		Categories I, II and III refer to and state from 41.3.2: contact(s) to be tested 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment 11) load			Allowed number of failures, criteria of failure
		Category 0 refer to, and state from 41.5.2: contact(s) to be tested 1) energization value 3) speed and duty factor and from 23.2: + 1) frequency of test voltage 3) details of dynamic test 5) points of measurement 6) test current 7) open-circuit voltage			Maximum contact circuit resistance
		(Low pressure) State from 26.9: 1) severity, recovery 8) test voltage, duration of voltage test			Additionally, final measurements apply No breakdown, no flashover
		+ Intermediate measurements: State all conditions and the part(s) of the climatic sequence to which they apply			Intermediate measurements: state required results
Symbols and circled numbers, see Clauses 12 and 13.					

Table I — Test schedule 1 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
19	Robustness of terminals (D) for pull, bend and twist	M State from 35.3: 1) procedure(s) and load(s)	S 2	...	None, but final measurements apply
20	Shock (D)	R State from 37.3: 1) method 2) pulse shape and acceleration 3) mounting 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
21	Bump (D)	R State from 38.4: 1) method 2) acceleration and number 3) mounting + 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
22	Vibration (D)	R State from 39.3: 1) vibration parameters 2) energization values, test and rated 3) mounting 4) monitoring details 5) contact load	S 2	...	+ opening and closing times Additionally, final measurements apply
23	Acceleration (D)	R State from 40.3: 1) method 2) acceleration + duration 3) mounting 4) monitoring details 5) energization value(s) × method I-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
24	Final measurements	State the appropriate conditions and performance requirements still applicable to the tests above, from the following:			
	— visual inspection, general	State from 17.7: + 3) visual conditions properties to be checked a) marking and identification b) correct housing + 4) shaking of the relay + 5) physical properties	Same AQL as for the test above	a) present and legible b) condition to be satisfactory 4) no audible noise ^a 5) state details of results: × no mechanical deterioration	
	— visual inspection, corrosion	+ State particular conditions unless self-evident			No evidence of corrosion which might impair operation
	— d.c. coil resistance	State from 19.1.3: Test No. ⑤			Resistance limit(s) of the coil(s)
	— insulation resistance	State from 22.2: Test No. ⑩			Minimum value(s) of insulation resistance
	— contact circuit resistance	State from 23.2: Test No. ⑩			Maximum contact circuit resistance
— other final measurements	+ State all conditions	State required results			
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table II — Test schedule 1 Qualification approval procedure requirements

Examination or test	Conditions and requirements of test		Sample size	Allowed defectives
	Refer to clause or sub-clause of IEC Publication 255-7	Description in Table I		
<i>Qualification approval procedure Requirements</i>			For symbols see Clause 12	
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified				
	16	Page 23		
<i>All samples</i> Minimum sample size 18 specimens				
Visual inspection, excluding dimensions	17	M Sub-group A0/A3	...	...
Dielectric test	20	M Sub-group A0	...	...
Functional test	24	M Sub-group A0	...	...
Sealing	31.2	M Sub-group A0	...	...
<i>Sample group 1</i> Minimum sample size 5 + 1 specimens				
Coil impedance	19.3	M Sub-group A1	...	...
Robustness of terminals	35	M Sub-group C5	...	...
Shock	37	R Sub-group C5	...	...
Bump	38	R Sub-group C5	...	...
Vibration	39	R Sub-group C5	...	...
Acceleration	40	R Sub-group C5	...	...
Final measurements as applicable — insulation resistance — contact-circuit resistance — other final measurements	22 23 Conditions as for Sub-group C4	× Sub-group C4 × Sub-group C4 + Results as for Sub-group C4	Same criteria as for the test above	
<i>Sample group 2</i> Minimum sample size 5 + 1 specimens				
Solderability, Test 1	36.3	M Sub-group B2	...	...
Damp heat	27 and 22	R Sub-group C5	...	...
Climatic sequence	26 and 22	R Sub-group C5	...	...
Final measurements as applicable — insulation resistance — contact-circuit resistance — other final measurements	22 23 Conditions as for Sub-group C4	× Sub-group C4 × Sub-group C4 + Results as for Sub-group C4	Same criteria as for the test above	
<i>Sample group 3</i> Minimum sample size 5 + 1 specimens				
Check of dimensions	17.1	M Sub-group A2/C3	...	...
Electrical endurance	41	M Sub-group C4	...	...
Final measurements as applicable — insulation resistance — contact-circuit resistance — other final measurements	22 23 Conditions as for Sub-group C4	× Sub-group C4 × Sub-group C4 + Results as for Sub-group C4	Same criteria as for the test above	
Symbols and circled numbers, see Clauses 12 and 13.				

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Quality conformance inspection</i> Requirements					
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified					
		From Sub-clause 16.7 of IEC Publication 255-7 state + 1) Atmospheric conditions + 2) Properties of supply and connections + 3) Cleaning and/or adjustment before test + 4) Fixing instructions + 5) Application of these conditions			1) See IEC Publication 68-1 2) See IEC Publication 443
Group A inspection <i>Sub-group A0</i> For all tests in this sub-group		<i>General case</i> 100 %-test	<i>Special case</i> IL: II	AQL: 0.065 ... 0.25 ... 0.65	
1	Visual inspection, marking	M 17.4 1) and 2)	...	...	Present and legible
2	Contact-circuit resistance	M State from 23.2: + 1) frequency of test voltage + 2) type of measurement × 3) details of dynamic test + 4) energization value + 5) points of measurement + 6) test current + 7) open-circuit voltage	...	...	Maximum contact-circuit resistance
3	Functional test	M State from 24.3: 1) operate and release value, preconditioning, polarity + 5) test on new relays + 6) magnetic orientation × 7) details of monitoring	...	...	Correct functioning
4	Dielectric test	M State from 20.2: 1) terminals 2) voltage parameters 3) duration	...	...	No breakdown, no flashover + maximum leakage current
5	Sealing	M State from 31.2.2: 1) method 3) pressurizing and cleaning × 4) details of Method 3	...	...	Method 1: no visible leakage Methods 2 and 3: maximum leakage rate
<i>Sub-group A1</i> For all tests in this sub-group			IL: I	AQL: 0.4 ... 1.0 ... 4	
6	Internal moisture	R State from 32.4: 1) energization value 2) temperature	I	...	None, but subsequent test to be performed as final measurement
7	Contact-circuit resistance	M 23.2 Test No. ②	I	...	Maximum contact circuit resistance
8	D.C. coil resistance	M State from 19.1.3: + 2) reference temperature × 3) temperature coefficient × 4) precautions	I	...	Resistance limit(s) of the coil(s)
9	Coil impedance	M State from 19.3: 1) method 3) energization value(s) + 4) test voltage + 5) alternative procedure	I	...	Impedance or burden limits
10	Mechanical tests	R State from 18.3: 1) properties to be tested, methods of test	I	...	State required results
11	Functional test	M 24.3 Test No. ③	I	...	Correct functioning
Symbols and circled numbers, see Clauses 12 and 13.					

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Sub-group A2</i> For all tests in this sub-group		IL: S 4 AQL: 0.4 ... 1.0 ... 4			
12	Check of dimensions	M State from 17.7: 1) dimensions + 2) creepage distances and clearances	S 4	...	Tolerances
<i>Sub-group A3</i> For all tests in this sub-group		IL: II AQL: 0.4 ... 1.0 ... 4			
13	Visual inspection, other than marking	M State from 17.7: + 3) visual conditions + 4) shaking of the relay a) 5) correct housing b) + other physical properties c)	II	...	a) no audible noise ^a b) condition, finish and workmanship to be satisfactory c) state details of results
<i>Sub-group A4</i> For all tests in this sub-group		IL: S 4 AQL: 0.4 ... 1.0 ... 4			
14	Dielectric test	M 20.2 Test No. ④	S 4	...	No breakdown, no flashover + maximum leakage current
Group B					
<i>Sub-group B1</i> For all tests in this sub-group		IL: S 3 AQL: 0.4 ... 1.5 ... 6.5			The test of this sub-group is destructive (D)
15	Electrical endurance (D)	<p>R State from 41.3, 41.4, 41.5 or 41.6 as applicable</p> <p>For 41.3 (Categories I, II, III) State from 41.3.2: contact(s) to be tested 1) number of operations or duration 2) Method 1 or 2 + 4) checking intervals for Method 2 + 6) temperature 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment and fuse rating 11) load(s) 12) final measurements Test No. ⑳ Test No. ㉑ + other measurements, state all conditions</p> <p>For 41.4 (Category 0) State from 41.4.2: contact(s) to be tested 2) energization value 3) speed and duty factor 4) number of operations or duration 5) contact-circuit resistance, state from 23.2: (see Test No. ㉒) + 6) temperature + 7) intermediate measurements state all conditions 8) final measurements Test No. ㉓ + other final measurements, state all conditions</p>	S 3	...	<p>Method 1: allowed number of failures, criteria of failure</p> <p>Method 2: criteria of failure</p> <p>Final measurements: minimum values of insulation resistance, maximum contact resistance, state required results</p> <p>Allowed number of failures, the criterion being:</p> <p>Maximum contact-circuit resistance</p> <p>Intermediate measurements: state required results</p> <p>Final measurements: minimum values of insulation resistance, state required results</p>
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
15	Electrical endurance (D)	For 41.5 (Category 0, miss-free) State from 41.5.2 : contact(s) to be tested 1) energization value 2) number of operations 3) speed and duty factor 4) contact-circuit resistance, state from 23.2 : (Test No. (2)) + 5) intermediate measurements, state all conditions 6) final measurements Test No. (27) + other final measurements, state all conditions For 41.6 (extended assessment) state all information required by IEC Publication 255-0-20, Sub-clause 5.2.1.2	S 3	...	Maximum contact-circuit resistance Intermediate measurements: state required results Final measurements: minimum values of insulation resistance state required results State all required results
<i>Sub-group B2</i>			IL: S 3		
For all tests in this sub-group			AQL: 0.4 ... 1.0 ... 4		
This sub-group contains destructive tests as marked by a (D)					
16	Magnetic remanence	R 54 and 25 , state from 54.3 : 1) saturate values, + duration of application + 2) contact criteria and from 25.3 : 1) mounting or position 5) contact parameters 8) contact to be checked × 10) suppression components	S 3	...	Limits of remanence value + duration of discontinuities to be ignored
17	Temperature rise	R State from 29.3 : 1) mounting 2) energization value, × duration × 3) conductor material + 4) temperature + 5) contact load	S 3	...	Limits of temperature rise
18	Rapid change of temperature, Method 2	M State from 30.3 : 2) temperature parameters + 3) contact load	S 3	...	None, but final measurements apply
19	Solderability Test 1 (D)	M State from 36.4 : 1) method + 2) ageing procedure	S 3	...	None, but final measurements apply
20	Robustness of terminals (D) for pull, bend and twist	M State from 35.3 : 1) procedure(s) and load(s)	S 3	...	None, but final measurements apply
21	Final measurements	State the appropriate conditions and performance requirements applicable to the tests above, from the following:			
	— visual inspection	State from 17.7 : + 3) visual conditions properties to be checked a) marking and identification b) correct housing × c) corrosion × d) solder wetting	Same AQL as for the test above	...	a) present and legible b) condition to be satisfactory c) corrosion index d) wetting index
	— insulation resistance	22.2 Test No. (27)			Minimum value(s) of insulation resistance
	— d.c. coil resistance	19.1.3 Test No. (8)			Resistance limit(s) of the coil(s)

Symbols and circled numbers, see Clauses 12 and 13.

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
	— contact circuit resistance — other final measurements	23.2 Test No. (2) + State all conditions			Maximum contact-circuit resistance State required result
<i>Sub-group B3</i> For all tests in this sub-group			IL: S 3		
			AQL: 0.1 ... 0.65 ... 2.5		
22	Contact sticking	M 53 and 25 , state from 53.3 : upper temperature 1) upper limit of operative range and from 25.3 : 1) mounting or position + 3) means of disconnection 5) contact parameters 8) contact(s) to be checked × 10) suppression components	S 3	...	Limit of release time + duration of discontinuities to be ignored
Group C IL and AQL are given here only as a guide. Instead of IL and AQL values, the detail specification shall indicate for each sub-group: 1) Periodicity of tests 2) Number of relays to be tested 3) Number of defectives allowed					
<i>Sub-group C1</i> For all tests in this sub-group			IL: S 2		The test of this sub-group is destructive
			AQL: 0.4 ... 1.5 ... 6.5		
23	Electrical endurance	R 41 Test No. (15)	S 2	...	Test No. 15
<i>Sub-group C2</i> For all tests in this sub-group			IL: S 3		
			AQL: 0.4 ... 1.0 ... 4		
24	Contact circuit resistance	M 23.2 Test No. (2)	S 3	...	Maximum contact-circuit resistance
25	Timing test	M State from 25.3 : 1) mounting or position 2) energization parameters + 3) means for disconnection 4) supply parameters 5) contact parameters × 7) further details 8) contact(s) to be checked × 10) suppression components	S 3	...	Limits of times to be measured + duration of discontinuities to be ignored
26	Dielectric test	M 20.2 Test No. (4)	S 3	...	No breakdown, no flashover + maximum leakage current
27	Insulation resistance	R State from 22.2 : 1) terminals + 2) measurement voltage + 3) time to reading	S 3	...	Minimum value(s) of insulation resistance
<i>Sub-group C4</i> For all tests in this sub-group			IL: S 2		The test of this sub-group is destructive
			AQL: 0.65 ... 1.5 ... 6.5		
28	Electrical endurance (D)	M 41 Test No. (15)	S 2	...	Test No. 15
29	Mechanical endurance (D)	M From 42.4 taking into account Note 4 of Appendix B of IEC Publication 255-10 state 1) method 1 or 2 2) energization value × 3) monitoring parameters 4) speed and duty factor 5) number of operations or duration × 7) intermediate checks, state all details	S 2	...	Method 1: allowed number of failures Method 2: state required results

Symbols and circled numbers, see Clauses 12 and 13.

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements	
30	Final measurements	State the appropriate conditions and performance requirements applicable to the tests above, from the following:	Same AQL as for the test above		a) present and legible b) condition to be satisfactory 4) no audible noise ^a 5) state details of result	
	— visual inspection	State from 17.7: + 3) visual conditions properties to be checked a) marking and identification b) correct housing + 4) shaking of the relay + 5) other physical properties				
	— insulation resistance	22.2 Test No. (27)				Minimum value(s) of insulation resistance
	— contact circuit resistance	3.2 Test No. (2)				Maximum contact circuit resistance
	— other final measurements	+ State all conditions				State required results
<i>Sub-group C5</i>		IL: S 2				
For all tests in this sub-group		AQL: 0.4 ... 1.0 ... 4				
This sub-group contains destructive tests as marked by a (D)						
31	Damp heat, steady state (D)	R 27 and 22, state from 27.3: 1) duration, recovery + 2) voltage and, for immediate final measurements, state from 22.2: Test No. (27)	S 2	...	None, but final measurements apply Minimum value(s) of insulation resistance	
32	climatic sequence (D)	R 26 and 22. State if 26.3, 26.5 and/or 26.6 are to be applied	S 2	...	Additionally, final measurements apply	
		(Dry heat) State from 26.9: 1) severity, recovery 2) energization value, duty and contact load 3) see also 24.3 1) operate and release value + 7) details of monitoring			Correct functioning	
		(Damp heat) State from 26.9: 1) severity, recovery and, for immediate final measurement after the last cycle of 26.6, state from 22.2: Test No. (27)			None, but final measurements apply Minimum value(s) of insulation resistance	
		(Cold) State from 26.9: 1) severity, recovery 5) method 6) operating test requirements, as follows:			Additionally, final measurements apply	
Symbols and circled numbers, see Clauses 12 and 13.						
^a Except that due to the normal structure						

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
32	climatic sequence (D)	Categories I, II and III refer to and state from 41.3.2 : contact(s) to be tested 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment 11) load Category 0 refer to, and state from 41.5.2 : contact(s) to be tested 1) energization value 3) speed and duty factor and from 23.2 : + 1) frequency of test voltage 3) details of dynamic test 5) points of measurement 6) test current 7) open-circuit voltage	S 2	...	Allowed number of failures, criteria of failure
		(Low pressure) State from 26.9 : 1) severity, recovery 8) test voltage duration of dielectric test			Additionally, final measurements apply No breakdown, no flashover
		+ Intermediate measurements: State all conditions and the part(s) of the climatic sequence to which they apply			Intermediate measurements State required result
33	Salt mist (D)	R State from 33.1.4 : 1) duration 2) recovery	S 2	...	None, but final measurements apply
34	Robustness of terminals (D) for pull, bend and twist	M 35.3 Test No. (20)	S 2	...	None, but final measurements apply
35	Shock (D)	R State from 37.4 : 1) method 2) pulse shape and acceleration 3) mounting 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
36	Bump (D)	R State from 38.4 : 1) method 2) acceleration and number 3) mounting + 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements
37	Vibration (D)	R State from 39.3 : 1) vibration parameters 2) energization values, test and rated 3) mounting 4) monitoring details 5) contact load	S 2	...	+ opening and closing times Additionally, final measurements apply
Symbols and circled numbers, see Clauses 12 and 13.					

Table III — Test schedule 2 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
38	Acceleration (D)	R State from 40.4: 1) method 2) acceleration + duration 3) mounting 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
39	Final measurements	State the appropriate conditions and performance requirements still applicable to the tests above, from the following:			
	— visual inspection, general	State from 17.7: + 3) visual conditions properties to be checked a) marking and identification b) correct housing + 4) shaking of the relay + 5) physical properties × surface	Same AQL as for the test above		a) present and legible b) condition to be satisfactory 4) no audible noise ^a 5) state details of results × no mechanical deterioration × no peeling or chipping
	— visual inspection, corrosion	+ State particular conditions unless self-evident			No evidence of corrosion which might impair operation
	— d.c. coil resistance	19.1.3 Test No. (8)			Resistance limit(s) of the coil(s)
	— insulation resistance	22.2 Test No. (27)			Minimum value(s) of insulation resistance
	— contact circuit resistance	23.2 Test No. (2)			Maximum contact circuit resistance
— other final measurements	+ State all conditions	State required results			
Sub-group C5 For all tests in this sub-group This sub-group contains destructive tests as marked by a (D)			IL: S 2	AQL: 1.5 ... 2.5 ... 6.5	
40	Thermal resistance	R State from 28.3: 1) mounting 2) energization values of operative range × 3) temperature coefficient + 4) evaluation procedure + 6) contact load	S 2	...	Limits of thermal resistance
41	Rapid change of temperature (D)	R State from 30.3: 1) method 2) temperature, duration + 3) contact load	S 2	...	None, but final measurements apply
42	Soldering: Test 2 (D)	R State from 36.4: 1) method	S 2	...	None, but final measurements apply
43	Final measurements	Test No. (39)			
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table IV — Test schedule 2 Qualification approval procedure requirements

Examination or test	Conditions and requirements of test		Sample size	Allowed defectives
	Refer to clause or sub-clause of IEC Publication 255-7	Description in Table I		
<i>Qualification approval procedure Requirements</i>		For symbols see Clause 12		
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified				
	16	Page 23		
<i>All samples</i> Minimum sample size 24 specimens				
Visual inspection, excluding dimensions	17	M Sub-group A0/A3	...	...
Dielectric test	20	M Sub-group A0	...	...
Contact-circuit resistance	23	M Sub-group A0	...	...
D.C. coil resistance	19.1	M Sub-group A1	...	...
Functional test	24	M Sub-group A1	...	...
Sealing	31.2	M Sub-group A0	...	...
<i>Sample group 1</i> Minimum sample size 5 + 1 specimens				
Internal moisture	32	M Sub-group A1	...	...
Coil impedance	19.3	M Sub-group A1	...	...
Magnetic remanence	54 and 25	R Sub-group B2	...	...
Contact sticking	53 and 25	R Sub-group B3	...	...
Mechanical tests	18.1	R Sub-group A1	...	...
Insulation resistance	22	M Sub-group C3	...	...
Thermoelectric e.m.f.	51	R Sub-group C5	...	...
Robustness of terminals	35	M Sub-group C5	...	...
Shock	37	R Sub-group C5	...	...
Bump	38	R Sub-group C5	...	...
Vibration	39	R Sub-group C5	...	...
Acceleration	40	R Sub-group C5	...	...
Final measurements, as applicable				
— visual inspection	17	× Sub-group C5	Same criteria as for the test above	
— d.c. coil resistance	19.1	× Sub-group C5		
— insulation resistance	22	× Sub-group C5		
— contact-circuit resistance	23	× Sub-group C5		
— other final measurements	Conditions as for Sub-group C5	+ results as for Sub-group C5		
Symbols and circled numbers, see Clauses 12 and 13.				

Table IV — Test schedule 2 Qualification approval procedure requirements

Examination or test	Conditions and requirements of test		Sample size	Allowed defectives
	Refer to clause or sub-clause of IEC Publication 255-7	Description in Table I		
<i>Sample group 2</i> Minimum sample size 5 + 1 specimens				
Solderability, Test 1	36.3	Ⓜ Sub-group B2	...	...
Rapid change of temperature, Method 1	30	Ⓜ Sub-group B2	...	...
Damp heat	27 and 22	R Sub-group C5	...	...
Climatic sequence	26 and 22	R Sub-group C5	...	...
Salt mist	33.1	Ⓜ Sub-group C5	...	...
Final measurements, if still applicable				Same criteria as for the test above
— visual inspection	17	× Sub-group C5		
— d.c. coil resistance	19.1	× Sub-group C5		
— insulation resistance	22	× Sub-group C5		
— contact-circuit resistance	23	× Sub-group C5		
— other final measurements	Conditions as for Sub-group C5	+ results as for Sub-group C5		
<i>Sample group 3</i> Minimum sample size 5 + 1 specimens				
Check of dimensions	17.1	M Sub-group A2	...	...
Weighing	18.2	R Sub-group C3	...	...
Electrical endurance	41	M Sub-group C4	...	...
Mechanical endurance	42	M Sub-group C4	...	...
Final measurements, as applicable				Same criteria as for the test above
— visual inspection	17	× Sub-group C4		
— insulation resistance	22	× Sub-group C4		
— contact-circuit resistance	23	× Sub-group C4		
— other final measurements	Conditions as for Sub-group C4	+ results as for Sub-group C4		
<i>Sample group 4</i> Minimum sample size 5 + 1 specimens				
Thermal resistance	28	R Sub-group C6	...	...
Temperature rise	29	R Sub-group B2	...	...
Rapid change of temperature, Method 2	30	Ⓜ Sub-group C6	...	...
Solderability, Test 2	36.3	R Sub-group C6	...	...
Final measurements, as applicable				Same criteria as for the test above
— visual inspection	17	× Sub-group C6		
— d.c. coil resistance	19.1	× Sub-group C6		
— insulation resistance	22	× Sub-group C6		
— contact-circuit resistance	23	× Sub-group C6		
— other final measurements	Conditions as for Sub-group C6	+ results as for Sub-group C6		
Symbols and circled numbers, see Clauses 12 and 13.				

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Quality conformance inspection Requirements</i>					
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified					
		From Sub-clause 16.7 of IEC Publication 255-7 state + 1) atmospheric conditions + 2) properties of supply and connections + 3) cleaning and/or adjustment before test 4) fixing instructions + 5) application of these conditions			1) See IEC Publication 68-1 2) See IEC Publication 443
Group A inspection <i>Sub-group A0</i> For all tests in this sub-group		<i>General case</i> 100 %-test	<i>Special case</i> IL: II AQL: 0.065 ... 0.25 ... 0.65		
1	Visual inspection, marking	M 17.4. 1) and 2)	...	...	Present and legible
2	Contact-circuit resistance	M State from 23.2: + 1) frequency of test voltage 2) type of measurement × 3) details of dynamic test + 4) energization value 5) points of measurement 6) test current 7) open circuit voltage	...	...	Maximum contact-circuit resistance
3	D.C. coil resistance	M State from 19.1: + 2) reference temperature × 3) temperature coefficient × 4) precautions	...	...	Resistance limit(s) of the coil(s)
4	Functional tests	M State from 24: 1) operate and release value, pre-conditioning, polarity 5) test on new relays + 6) magnetic orientation × 7) details of monitoring	...	...	Correct functioning
5	Dielectric test	M State from 20.2: 1) terminals 2) voltage parameters 3) duration	...	...	No breakdown, no flashover + maximum leakage current
6	Sealing	M State from 31.2.2: 1) method 3) pressurizing and cleaning × 4) details of Method 3	...	...	Method 1: no visible leakage Methods 2 and 3: maximum leakage rate
<i>Sub-group A1</i> For all tests in this sub-group			IL: I AQL: 0.4 ... 1.0 ... 4		
7	Internal moisture	R State from 32.4: 1) energization value 2) temperature	I	...	None, but subsequent test to be performed as final measurement
8	Contact-circuit resistance	M 23.2 Test No. (2)	I	...	Maximum contact-circuit resistance
9	D.C. coil resistance	M 19.1.3 Test No. (3)	I	...	Resistance limit(s) of the coil(s)
10	Coil impedance	M State from 19.3.3: 1) method 3) energization value(s) + 4) test voltage + 5) alternative procedure	I	...	Impedance or burden limits
11	Functional test	M 24 Test No. (4)	I	...	Correct functioning
Symbols and circled numbers, see Clauses 12 and 13.					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
12	Timing tests	R State from 25.3: 1) mounting or position 2) energization parameters + 3) means for disconnection 4) supply parameters 5) contact parameters × 7) further details 8) contact(s) to be checked × 10) suppression components	I	...	Limits of the times to be measured + duration of discontinuities to be ignored
13	Mechanical tests	R State from 18.3: 1) properties to be tested, methods of test	I	...	State required results
<i>Sub-group A2</i>		IL: S 4			
For all tests in this sub-group		AQL: 0.4 ... 1.0 ... 4			
14	Check of dimensions	M State from 17.7: 1) dimensions + 2) creepage distances and clearances	S 4	...	Tolerances
<i>Sub-group A3</i>		IL: II			
For all tests in this sub-group		AQL: 0.4 ... 1.0 ... 4			
15	Visual inspection, other than marking	M State from 17.7: + 3) visual conditions + 4) shaking of the relay a) 5) correct housing b) + other physical properties c)	II	...	a) no audible noise ^a b) condition, finish and workmanship to be satisfactory c) state details of results
<i>Sub-group A4</i>		IL: S 4			
For all tests in this sub-group		AQL: 0.4 ... 1.0 ... 4			
16	Insulation resistance	M State from 22.2: 1) terminals + 2) measurement voltage + 3) time to reading	S 4	...	Minimum value(s) of insulation resistance
17	Dielectric test	M 20.2 Test No. (5)	S 4	...	No breakdown, no flashover + maximum leakage current
Group B					
<i>Sub-group B1</i>		IL: S 3			
For all tests in this sub-group		AQL: 0.4 ... 1.5 ... 6.5	The test of this sub-group is destructive		
18	Electrical endurance (D)	R State from 41.3, 41.4, 41.5 or 41.6 as applicable: (Categories I, II, III) State from 41.3.2: contact(s) to be tested 1) number of operations or duration 2) Method 1 or 2 + 4) checking intervals for Method 2 + 6) temperature 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment and fuse rating 11) load(s) 12) final measurements Test No. (16) Test No. (2) + other measurements; state all conditions	S 3	...	Method 1: allowed number of failures, criteria of failure Method 2: criteria of failure Final measurements: minimum values of insulation resistance, maximum contact-circuit resistance, state required results
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
18	Electrical endurance (D)	(Category 0) State from 41.4.2 : contact(s) to be tested 2) energization value 3) speed and duty factor 4) number of operations or duration 5) contact-circuit resistance. state from 23.2 : (see Test No. ②) + 6) temperature + 7) intermediate measurements; state all conditions 8) final measurements Test No. ⑩ + other final measurements; state all conditions (Category 0, miss-free) State from 41.5.2 : contact(s) to be tested 1) energization value 2) number of operations 3) speed and duty factor 4) contact-circuit resistance, state from 23.2 : (Test No. ②) + 5) intermediate measurements: state all conditions 6) final measurements Test No. ⑩ + other final measurements: state all conditions For 41.6 (extended assessment) state all information required in IEC Publication 255-0-20, Sub-clause 5.2.1.2	S 3	...	Allowed number of failures, the criteria of failure being: Maximum contact-circuit resistance Intermediate measurements: state required results Final measurements: minimum values of insulation resistance state required results Maximum contact-circuit resistance Intermediate measurements: state required results Final measurements: minimum values of insulation resistance. state all required results State all required results
<i>Sub-group B2</i> For all tests in this sub-group This sub-group contains destructive tests as marked by a (D)		IL: S 3 AQL: 0.4 ... 1.0 ... 4			
19	Magnetic remanence	R 54 and 25 , state from 54.3 : 1) saturate values, + duration of application 2) contact criteria and from 25.3 : 1) mounting or position 5) contact parameters 8) contact to be checked × 10) suppression components	S 3	...	Limits of remanence value + duration of discontinuities to be ignored
20	Temperature rise	R State from 29.3 : 1) mounting 2) energization value, × duration × 3) conductor material + 4) temperature + 5) contact load	S 3	...	Limits of temperature rise
21	Rapid change of temperature, Method 2	M State from 30.3 : 2) temperature parameters + 3) contact load	S 3	...	None, but final measurements apply
22	Solderability, Test 1 (D)	M State from 36.4 : 1) method + 2) ageing procedure	S 3	...	None, but final measurements apply
23	Robustness of terminals (D) for pull, bend and twist	M State from 35.3 : 1) procedure(s) and load(s)	S 3	...	None, but final measurements apply
Symbols and circled numbers, see Clauses 12 and 13.					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
24	Final measurements	State the appropriate conditions and performance requirements applicable to the tests above, from the following:			
	— visual inspection	State from 17: + 3) visual conditions properties to be checked a) marking and identification b) correct housing × c) corrosion × d) solder wetting	Same AQL as for the test above		a) present and legible b) condition to be satisfactory c) corrosion index d) wetting index
	— insulation resistance	22.2 Test No. (16)			Minimum value(s) of insulation resistance
	— d.c. coil resistance	19.1.3 Test No. (3)			Resistance limit(s) of the coil(s)
	— contact-circuit resistance	23.2 Test No. (2)			Maximum contact circuit resistance
— other final measurements	+ State all conditions	State required results			
<i>Sub-group B3</i> For all tests in this sub-group		IL: S 3 AQL: 0.1 ... 0.65 ... 2.5			
25	Contact sticking	Ⓡ 53 and 25, state from 53.3: upper temperature 1) upper limit of operative range and from 25.3: 1) mounting or position + 3) means of disconnection 5) contact parameters 8) contact(s) to be checked × 10) suppression components	S 3	...	Limit of release time + duration of discontinuities to be ignored
Group C IL and AQL are given here only as a guide. Instead of IL and AQL values, the detail specification shall indicate for each sub-group: 1) Periodicity of tests 2) Number of relays to be tested 3) Number of defectives allowed					
<i>Sub-group C1</i> For all tests in this sub-group		IL: S 2 AQL: 0.4 ... 1.5 ... 6.5	The test of this sub-group is destructive (D)		
26	Electrical endurance	Ⓡ Test No. (18)	S 2	...	Test No. (18)
<i>Sub-group C2</i> For all tests in this sub-group		IL: S 3 AQL: 0.4 ... 1.0 ... 4			
27	Contact-circuit resistance	Ⓜ 23.2 Test No. (2)	S 3	...	Maximum contact-circuit resistance
28	Coil inductance	R State from 19.2.3: 2) measurement voltage 3) measurement frequency 4) energization value + 5) details of alternative procedure	S 3	...	Coil inductance limits, unenergized and energized state
29	Timing tests	M 25.3 Test No. (12)	S 3	...	Limits of times to be measured + duration of discontinuities to be ignored
30	Dielectric test	M 20.2 Test No. (5)	S 3	...	No breakdown, no flashover + maximum leakage current
<i>Sub-group C3</i> For all tests in this sub-group		IL: S 2 AQL: 0.65 ... 1.5 ... 6.5			
31	Weighing	R 18.2	S 2	...	Weight and tolerances
Symbols and circled numbers, see Clauses 12 and 13.					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
32	Contact noise	R State from 50.3: 1) energization value(s) + 2) shock and/or vibration parameters (see C5) 3) test circuit 4) measuring equipment	S 2	...	Limits of noise voltage
<i>Sub-group C4</i> For all tests in this sub-group		IL: S 2 AQL: 0.65 ... 1.5 ... 6.5	The tests of this sub-group are destructive		
33	Electrical endurance	M 41 Test No. (18)	S 2	...	Test No. (18)
34	Mechanical endurance (D)	M State from 42.4 taking into account Note 4 of Appendix B of IEC Publication 255-10: 1) Method 1 or 2 2) energization value × 3) monitoring parameters 4) speed and duty factor 5) number of operations or duration × 7) intermediate checks, state all details	S 2	...	Method 1: allowed number of failures Method 2 state required results
35	Final measurements	State the appropriate conditions and performance requirements applicable to the tests above, from the following:			
	— visual inspection	State from 17.7: + 5) visual conditions Properties to be checked a) marking and identification b) correct housing + 4) shaking of the relay + 5) other physical properties	Same AQL as for the test above	a) present and legible b) condition to be satisfactory 4) no audible noise ^a 5) state details of results	
	— insulation resistance	22.2 Test No. (16)		Minimum value(s) of insulation resistance	
	— contact circuit resistance	23.2 Test No. (2)		Maximum contact-circuit resistance	
	— other final measurements	+ State all conditions		State required results	
<i>Sub-group C5</i> For all tests in this sub-group This sub-group contains destructive tests as marked by a (D)		IL: S 2 AQL: 0.4 ... 1.0 ... 4			
36	Thermoelectric e.m.f.	R State from 51.3: 1) method and material for soldering 2) ambient temperature	S 2	...	Limit of e.m.f.
37	Thermal endurance (D)	R 43 and 24, state from 43.3: 1) mounting 2) duration 3) ambient temperature 4) energization value contact load and, for immediate final measurements, state from 24.3: 1) operate and release value + 7) details of monitoring	S 2	...	None, but final measurements apply Correct functioning
38	Damp heat, steady state (D)	R 27 and 22, state from 27.3: 1) duration, recovery + 2) voltage and, for immediate final measurements, Test No. (16)	S 2	...	None, but final measurements apply Minimum value(s) of insulation resistance
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
39	Climatic sequence (D)	R 26 and 22, state if 26.3, 26.5 and/or 26.6 are to be applied	S 2	...	
		(Dry heat) State from 26.9: 1) severity, recovery 2) energization value, duty and contact load 3) see also 24.3 1) operate and release value + 7) details of monitoring			Additionally, final measurements apply Correct functioning
		(Damp heat) State from 26.9: 1) severity, recovery and, for immediate final measurement after the last cycle of 26.6 state from 22.2: 1) terminals + 2) measurement voltage + 3) time to reading			None, but final measurements apply Minimum value(s) of insulation resistance
		(Cold) State from 26.9: 1) severity, recovery 5) method 6) operating test requirements, as follows: Categories I, II and III: refer to and state contacts from 41.3.2: 7) energization value 8) speed and duty factor + 9) protective devices + 10) checking equipment 11) load Category 0: refer to, and state from 41.5.2: contact(s) to be tested 1) energization value 3) speed and duty factor and from 23.2: + 1) frequency of test voltage 3) details of dynamic test 5) point of measurement 6) test current 7) open-circuit voltage			Additionally, final measurements apply Allowed number of failures, criteria of failure Maximum contact circuit resistance
		(Low pressure) State from 26.9: 1) severity, recovery 8) test voltage, duration of voltage test			Additionally, final measurements apply No breakdown, no flashover
		+ Intermediate measurements: State all conditions and the part(s) of the climatic sequence to which they apply			Intermediate measurements: state required results
40	Salt mist (D)	R State from 33.1.4: 1) duration 2) recovery	S 2	...	None, but final measurements apply
41	Robustness of terminals (D) for pull, bend and twist	M 35.2 Test No. ②	S 2	...	None, but final measurements apply
42	Shock (D)	R State from 37.4: 1) method 2) pulse shape and acceleration 3) mounting 4) monitoring details 5) energization value(s) × Method 1-test and or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements apply
Symbols and circled numbers, see Clauses 12 and 13.					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
43	Bump (D)	R State from 38.4: 1) method 2) acceleration and number 3) mounting + 4) monitoring details 5) energization value(s), × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Both methods: final measurements
44	Vibration (D)	R State from 39.3: 1) vibration parameters 2) energization values, test and rated 3) mounting 4) monitoring details 5) contact load	S 2	...	+ opening and closing times Additionally, final measurements apply
45	Acceleration (D)	R State from 40.4: 1) method 2) acceleration + duration 3) mounting 4) monitoring details 5) energization value(s) × Method 1-test and/or rated × contact load	S 2	...	Method 1: + opening and closing times Additionally final measurements apply
46	Final measurements	State the appropriate conditions and performance requirements still applicable to the tests above, from the following:			
	— visual inspection, general	State from 17.7: + 3) visual conditions properties to be checked a) marking and identification b) correct housing + 4) shaking of the relay + 5) physical properties, × surface	Same AQL as for the test above		a) present and legible b) condition to be satisfactory 4) no audible noise ^a 5) state details of results: × no mechanical deterioration × no peeling or chipping
	— visual inspection, corrosion	+ State particular conditions unless self-evident			No evidence of corrosion which might impair operation
	— d.c. coil resistance	19.1.3 Test No. (3)			Resistance limit(s) of the coil(s)
	— insulation resistance	22.2 Test No. (16)			Minimum value(s) of insulation resistance
	— contact-circuit resistance	23.2 Test No. (2)			Maximum contact-circuit resistance
	— other final measurements	+ State all conditions			State required results
Symbols and circled numbers, see Clauses 12 and 13.					
^a Except that due to the normal structure					

Table V — Test schedule 3 Quality conformance inspection requirements

Test No.	Examination or test	Conditions of test Refer to clause or sub-clause of IEC Publication 255-7	IL	AQL	Performance requirements
<i>Sub-group C6</i> For all tests in this sub-group This sub-group contains destructive tests as marked by a (D)					
			IL: S 2		
			AQL: 1.5 ... 2.5 ... 6.5		
47	Thermal resistance	R State from 28.3 : 1) mounting 2) energization values of operative range × 3) temperature coefficient + 4) evaluation procedure + 6) contact load	S 2	...	Limits of thermal resistance
48	Rapid change of temperature (D), Method 1	R State from 30.3 : 2) temperatures, duration + 3) contact load	S 2	...	None, but final measurements apply
49	Soldering: Test 2 (D)	R State from 36.4 : 1) method	S 2	...	None, but final measurements apply
50	Mould growth (D)	R State from 34.3 : 1) all information required in IEC Publication 68-2-10 Clause 8, Items a) to g)	S 2	...	State all required results
51	Final measurements	Test No. (46)			
Symbols and circled numbers, see Clauses 12 and 13.					

Table VI — Test schedule 3 Qualification approval procedure requirements

Examination or test	Conditions and requirements of test		Sample size	Allowed defectives
	Refer to clause or sub-clause of IEC Publication 255-7	Description in Table I		
<i>Qualification approval procedure Requirements</i>		For symbols see Clause 12		
<i>Standard conditions for testing</i> Applicable to all tests unless otherwise specified				
	16	Page 23		
<i>All samples</i> Minimum sample size 24 specimens				
Visual inspection, excluding dimensions	17	M Sub-group A0/A3	...	...
Dielectric test	20	M Sub-group A0	...	...
Contact-circuit resistance	23	M Sub-group A0	...	...
D.C. coil resistance	19.1	M Sub-group A0	...	...
Functional test	24	M Sub-group A0	...	...
Sealing	31.2	M Sub-group A0	...	...
<i>Sample group 1</i> Minimum sample size 5 + 1 specimens				
Internal moisture	32	M Sub-group A1	...	...
Coil impedance	19.3	M Sub-group A1	...	...
Magnetic remanence	54 and 25	R Sub-group B2	...	...
Contact sticking	53 and 25	R Sub-group B3	...	...
Timing test	25	M Sub-group A1	...	...
Mechanical tests	18.1	R Sub-group A1	...	...
Insulation resistance	22	M Sub-group A4	...	...
Thermal e.m.f.	51	R Sub-group C5	...	...
Robustness of terminals	35	M Sub-group C5	...	...
Shock	37	R Sub-group C5	...	...
Bump	38	R Sub-group C5	...	...
Vibration	39	R Sub-group C5	...	...
Acceleration	40	R Sub-group C5	...	...
Final measurements, as applicable				
— visual inspection	17	× Sub-group C5	Same criteria as for the test above	
— d.c. coil resistance	19.1	× Sub-group C5		
— insulation resistance	22	× Sub-group C5		
— contact-circuit resistance	23	× Sub-group C5		
— other final measurements	Conditions as for Sub-group C5	+ Results as for Sub-group C5		
<i>Sample group 2</i> Minimum sample size 5 + 1 specimens				
Symbols and circled numbers, see Clauses 12 and 13.				

Table VI — Test schedule 3 Qualification approval procedure requirements

Examination or test	Conditions and requirements of test		Sample size	Allowed defectives
	Refer to clause or sub-clause of IEC Publication 255-7	Description in Table I		
Solderability, Test 1	36.3	M Sub-group B2	...	...
Rapid change of temperature, Method 2	30	M Sub-group B2	...	...
Coil inductance	19.2	R Sub-group C2	...	...
Thermal endurance	43 and 24	R Sub-group C5	...	...
Damp heat	27 and 22	R Sub-group C5	...	...
Climatic sequence	26 and 22	R Sub-group C5	...	...
Salt mist	33.1	R Sub-group C5	...	...
Final measurements, if still applicable			Same criteria as for the test above	
— visual inspection	17	× Sub-group C5		
— d.c. coil resistance	19.1	× Sub-group C5		
— insulation resistance	22	× Sub-group C5		
— contact-circuit resistance	23	× Sub-group C5		
— other final measurements	Conditions as for Sub-group C5	+ Results as for Sub-group C5		
<i>Sample group 3</i>				
Minimum sample size 5 + 1 specimens				
Check of dimensions	17.1	M Sub-group A2	...	...
Weighing	18.2	R Sub-group C3	...	...
Contact noise	50	R Sub-group C3	...	...
Electrical endurance	41	M Sub-group C4	...	...
Mechanical endurance	42	M Sub-group C4	...	...
Final measurements, as applicable			Same criteria as for the test above	
— visual inspection	17	× Sub-group C4		
— insulation resistance	22	× Sub-group C4		
— contact-circuit resistance	23	× Sub-group C4		
— other final measurements	Conditions as for Sub-group C4	+ Results as for Sub-group C4		
<i>Sample group 4</i>				
Minimum sample size 5 + 1 specimens				
Thermal resistance	28	R Sub-group C6	...	...
Temperature rise	29	R Sub-group B2	...	...
Rapid change of temperature, Method 1	30	R Sub-group C6	...	...
Soldering, Test 2	36.3	R Sub-group C6	...	...
Mould growth	34	R Sub-group C6	...	...
Final measurements, as applicable			Same criteria as for the test above	
— visual inspection	17	× Sub-group C6		
— d.c. coil resistance	19.1	× Sub-group C6		
— insulation resistance	22	× Sub-group C6		
— contact-circuit resistance	23	× Sub-group C6		
— other final measurements	Conditions as for Sub-group C6	+ Results as for Sub-group C6		
Symbols and circled number, see Clauses 12 and 13.				

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