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[SIST EN 60255-21-2:2001](#)

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60255-21-2

November 1995

ICS 29.120.70

Descriptors: Measuring relays, shock and bump tests

English version

Electrical relays
Part 21: Vibration, shock, bump and seismic tests on
measuring relays and protection equipment
Section 2: Shock and bump tests
(IEC 255-21-2:1988)

Relais électriques

Partie 21: Essais de vibrations, de chocs, de secousses et de tenue aux séismes applicables aux relays de mesure et aux dispositifs de protection
Section 2: Essais de chocs et de secousses
(CEI 255-21-2:1988)

Elektrische Relais

Teil 21: Schwing-, Schock-, Dauerschock- und Erdbebenprüfungen an Meßrelais und Schutzeinrichtungen
Hauptabschnitt 2: Schock- und Dauerschockprüfungen
(IEC 255-21-2:1988)

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This European Standard was approved by CENELEC on 1995-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 255-21-2:1988, prepared by SC 41B^{*)}, Measuring relays and protection equipment, of IEC TC 41, Electrical relays, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60255-21-2 on 1995-09-20 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-10-01

Annexes designated "normative" are part of the body of the standard. In this standard, appendix A and annex ZA are normative. Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 255-21-2:1988 was approved by CENELEC as a European Standard without any modification.

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^{*)} IEC SC 41B has been replaced by IEC TC 95, Measuring relays and protection equipment.

Annex ZA (normative)

Normative references to international publications
with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 68-2-27	1987	Basic environmental testing procedures Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 68-2-29	1987	Test Eb and guidance: Bump	EN 60068-2-29 ¹⁾	1993
IEC 255-7	1978	Electrical relays Part 7: Test and measurement procedures for electromechanical all-or-nothing relays	-	-
IEC 255-21-1	1988	Part 21: Vibration, shock, bump and seismic tests on measuring relays and protection equipment Section 1: Vibration tests (sinusoidal)	EN 60255-21-1	1995
ISO 2041	1975	Vibration and shock - Vocabulary	-	-

1) EN 60068-2-29 includes a corrigendum to IEC 68-2-29.

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NORME INTERNATIONALE INTERNATIONAL STANDARD

CEI
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Première édition
First edition
1988



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

Relais électriques

Vingt et unième partie: Essais de vibrations, de chocs, de secousses
et de tenue aux séismes applicables aux relais de mesure et aux dispositifs
de protection

Section deux – Essais de chocs et de secousses

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Electrical relays

Part 21: Vibration, shock, bump and seismic tests on measuring relays and
protection equipment

Section Two – Shock and bump tests

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL RELAYS

Part 21: Vibration, shock, bump and seismic tests
on measuring relays and
protection equipment

Section Two - Shock and bump tests

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

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PREFACE

This standard has been prepared by Sub-Committee 41B: Measuring relays and protection equipment, of IEC Technical Committee No. 41: Electrical relays.

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

Six Months' Rule	Report on Voting
41B(CO)38	41B(CO)41

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

The following IEC publications are quoted in this standard:

- Publications Nos. 68-2-27 (1987): Basic environmental testing procedures, Part 2: Tests - Test Ea and guidance: Shock.
- 68-2-29 (1987): Test Eb and guidance: Bump.
- 255-7 (1978): Electrical relays, Part 7: Test and measurement procedures for electromechanical all-or-nothing relays.
- 255-21-1 (1988): Part 21: Vibration, shock, bump and seismic tests on measuring relays and protection equipment - Section One: Vibration tests (sinusoidal). (Being printed.)

Other publication quoted:

- ISO Standard 2041 (1975): Vibration and shock - Vocabulary.

ELECTRICAL RELAYS

Part 21: Vibration, shock, bump and seismic tests
on measuring relays and
protection equipment

SECTION TWO - SHOCK AND BUMP TESTS

1. Scope

This standard is part of a series specifying the vibration, shock, bump and seismic requirements applicable to electromechanical and static measuring relays and protection equipment with or without output contacts.

This standard includes two types of test:

- the shock test (on energized and non-energized specimen);
- the bump test (on non-energized specimen),

and is generally based on IEC 68-2-27 and 68-2-29.

The requirements of this standard are applicable only to measuring relays and protection equipment in new condition. The tests specified in this standard are type tests.

2. Object

The object of this standard is to state:

- definitions of terms used;
- test conditions;
- standard test severity classes;
- test procedure;
- criteria for acceptance.

3. Definitions

For definitions of general terms not defined in this standard, reference should be made to:

- International Electrotechnical Vocabulary (IEV) [IEC 50];
- IEC 68-2-27 and 68-2-29;
- relay standards published in the IEC 255 series;
- ISO 2041;
- Section One: Vibration tests (sinusoidal) [IEC 255-21-1].

For the purpose of this standard the following definitions shall apply:

3.1 Shock test

A test during which a specimen, non-energized or energized under specified conditions, is subjected to a limited number of single shocks, in the three different axes of the specimen in turn, to determine its capability to withstand the effects of shocks.

Note.- The term "specimen" includes any auxiliary part which is an integral functional feature of the measuring relay or protection equipment under test.

3.2 Shock response test

A shock test carried out on a measuring relay or protection equipment, energized under specified conditions, to determine its response to shocks likely to be occasionally encountered in service.

3.3 Shock withstand test

A high level shock test carried out on a non-energized measuring relay or protection equipment to determine its capability to withstand shocks likely to be occasionally encountered during transportation and handling.

3.4 Bump test

A test during which a non-energized measuring relay or protection equipment is subjected to a limited number of bumps, in three different axes of the specimen in turn, to determine its capability to withstand the effects of bumps likely to be encountered during transportation.

4. Requirements for shock and bump tests

The main parameters of the shock and bump tests are the following:

- acceleration;
- duration of the nominal pulse;
- number of pulses applied.

In this standard the pulse shape used is one half-cycle of a sine wave.

4.1 Test apparatus and mounting

The required characteristics of the shock and bump generators and fixtures together with the mounting requirements shall be as specified in the following sub-clauses.

The characteristics shall apply when the specimen is mounted on the generator.

4.1.1 Acceleration tolerances

The nominal pulse shape for shock and bump tests shall be one half-cycle of a sine wave, as indicated by the dotted line shown in Figure 1.