



SLOVENSKI STANDARD SIST EN 12016:1999

01-april-1999

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Electromagnetic compatibility - Product family standard for lifts, escalators and passenger conveyors - Immunity

Elektromagnetische Verträglichkeit - Produktfamilien-Norm für Aufzüge, Fahrtreppen und Fahrsteige - Störfestigkeit

Compatibilité électromagnétique - Norme famille de produits pour ascenseurs, escaliers mécaniques et trottoirs roulants - Immunité

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Ta slovenski standard je istoveten z: EN 12016:1998

ICS:

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| 33.100.20 | Imunost | Immunity |
| 91.140.90 | Öçã aapE^\ [^Á d] } Æ^ | Lifts. Escalators |

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12016

May 1998

ICS 33.100; 91.140.90

Descriptors: electromagnetic compatibility, lifts, escalators, passenger conveyors, tests, testing conditions, electromagnetic interference, levels

English version

Electromagnetic compatibility - Product family standard for lifts, escalators and passenger conveyors - Immunity

Compatibilité électromagnétique - Norme famille de produits pour ascenseurs, escaliers mécaniques et trottoirs roulants - Immunité

Elektromagnetische Verträglichkeit - Produktfamilien-Norm für Aufzüge, Fahrtreppen und Fahrsteige - Störfestigkeit

This European Standard was approved by CEN on 2 May 1998.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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AGENZIA ITALIANA
CONSORZIO ITALIANO
PER LE STANDARDIZZAZIONI
E LE CERTIFICAZIONI
TECNICHE

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 10 " Passenger, goods and service lifts", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

The initial draft for the standard was prepared by the Fédération Européenne de la Manutention (FEM) and consideration was given to EN 50082-1 : 1992, Electromagnetic compatibility - Generic immunity standard - Part 1: Residential, commercial and light industry and prEN 50082-2 : 1991 : Part 2 - Industrial environment. The levels of immunity and the resultant performance criteria which are given in this standard reflect the fact that lifts, escalators and passenger conveyors are deemed to consist of self-contained sub-systems and apparatus (e.g. machine room, lift car etc.) This standard is the product family standard for the electromagnetic compatibility of lifts, escalators and passenger conveyors (immunity) and takes precedence over all aspects of the generic standard.

The related EMC product family standard for emission is :

EN 12015 <https://standards.iteh.ai/catalog/standards/sist/d2f07b8c-3e82-4645-910e-3d1609017278/sist-en-12016-1999>
Electromagnetic compatibility - Product family standard for lifts, escalators and passenger conveyors. Emission

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

This European Standard has been prepared to provide one means of conforming with the requirements of the Electromagnetic Compatibility (EMC) Directive. The requirements of this European Standard have been specified so as to ensure a level of electromagnetic immunity which will allow minimal disturbance to the product family.

Two levels of immunity are given which have been selected such that the immunity levels for safety circuit apparatus are higher than the immunity levels for normal operation apparatus. The higher levels cover the possibility for example of disturbances emanating from hand-held transmitters in close proximity to safety circuit apparatus.

Neither level, however, covers cases where an extremely low probability of occurrence exists.

The immunity levels given, are on the basis that equipment of the product family range is installed both indoor and outdoor in all types of building and, generally, is connected to a low voltage system.

It is known that in the field of EMC provision, technology changes often require amendment to standards. During the preparation of this standard, equipment operating in the radio frequency (RF) field above 500 MHz has been introduced into the market. A revision to this standard will be prepared stating the performance criteria and associated test values at these frequencies. In the meantime due to distances etc. it is assumed that equipment utilizing frequencies above 500 MHz will not be used in close proximity to lift, escalator and passenger conveyor controls.

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1 Scope

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This European Standard specifies the immunity levels and test conditions for lifts, escalators and passenger conveyors, which are permanently installed in buildings and for which CEN/TC 10 has direct responsibility for the production of European Standards, in relation to continuous and transient, conducted and radiated disturbances including electrostatic discharges. These levels represent essential EMC requirements; however, this standard does not specify the basic safety requirements for lifts, escalators and passenger conveyors, which are covered by EN 81-1, EN 81-2 and EN 115. If, however, electronic means are used in safety circuits associated with safety components then this standard applies. In other cases, where ultimate passenger safety is not influenced by EMC considerations, this standard can be used to assess the overall performance.

Since lifts travel large vertical distances in buildings, it becomes impracticable to test the total assembly either in a test laboratory or in situ (where the uncontrolled environment may also influence the test procedures and results). Likewise, due to practical restrictions imposed by the lift car internal dimensions, it is impracticable to test the lift car from within. Similar considerations regarding dimensions apply equally to the testing of escalators and passenger conveyors. Therefore, this standard applies to the sub-systems and/or apparatus of lifts, escalators and passenger conveyors, an assembly of which will comprise an installation, the boundaries of which are indicated by example in figures 2 and 3. However this standard does not apply to lighting apparatus and other services already proven to be in conformity to the EMC Directive.

2 Normative references

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.

- EN 61000-4-2 Electromagnetic Compatibility - Part 4 : Testing and measurement techniques - Section 2 : Electromagnetic discharge immunity test - Basic EMC publication
- EN 61000-4-3 Electromagnetic Compatibility - Part 4 : Testing and measurement techniques - Section 3 : Radiated, radio-frequency, electromagnetic field immunity test
- EN 61000-4-4 Electromagnetic Compatibility - Part 4 : Testing and measurement techniques - Section 4 : Electrical fast transient/burst immunity test - Basic EMC publication
- EN 61000-4-11 Electromagnetic Compatibility - Part 4 : Testing and measurement techniques - Section 11 : Voltage dips, short interruptions and voltage variations immunity tests

3 Definitions

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For the purposes of this standard the following definitions apply :

3.1 installation

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Lift, escalator or passenger conveyor installation comprising sub-systems with electrical and electronic equipment and interconnections.

3.2 sub-system

An assembly of apparatus which is appropriate for assessment for conformity to this standard and, by means of interconnection with other sub-systems, forms an installation (see clause 4).

3.3 apparatus

An assembly of components with an intrinsic function intended for use in a sub-system or installation.

3.4 port

Particular interface of the specified sub-system or apparatus with the external electromagnetic environment (see figure 1).

3.5 enclosure port

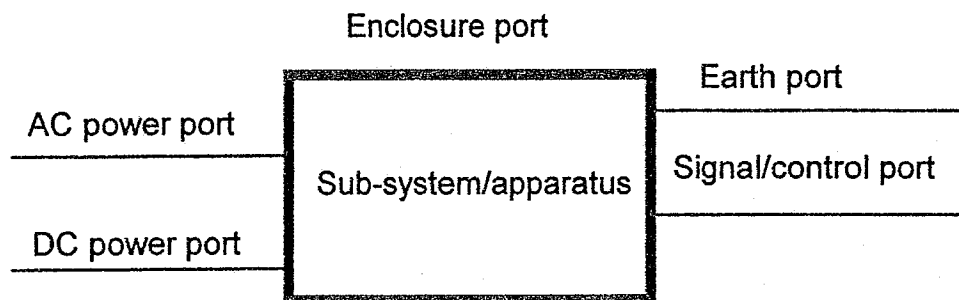
The boundary of the sub-system or apparatus through which electromagnetic fields may radiate or impinge.

3.6 safety circuit

An electric safety device conforming to EN 81-1, EN 81-2 or EN 115.

3.7 general function circuit

Circuitry used in a sub-system or apparatus which does not incorporate safety circuits.



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 Figure 1 : Examples of ports

4 Composition of sub-systems SIST EN 12016:1999

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The following assemblies of apparatus shall be considered as sub-systems and are exemplified in figures 2 and 3 :

a) for lifts :

- 1) all machine room apparatus connected to the lift main switch ;
- 2) apparatus associated with the lift car e.g. door gear, control panel, door protection devices etc. ;
- 3) apparatus associated with each lift floor excluding the lift car ;

b) for escalators and passenger conveyors :

- 1) all machine room apparatus connected to the escalator or passenger conveyor main switch ;
- 2) apparatus associated with escalator or passenger conveyor landings.

Other assemblies of apparatus may also be considered as sub-systems.

5 Test set-up

5.1 The tests, test methods, characteristics of the tests and test set-ups shall be as stated in EN 61000-4-2, EN 61000-4-3, EN 61000-4-4 and EN 61000-4-11 as appropriate (see tables 1 to 7).

5.2 The test shall be carried out in the most susceptible mode under any operating conditions. An attempt shall be made to maximize the susceptibility by varying the configuration of the test sample.

5.3 Travelling cables or any other cables likely to be more than 5 m long shall be represented by a sample of at least 5 m long connected to the relevant port for the purpose of testing for susceptibility.

5.4 It is not always possible to measure the immunity levels for every function of the apparatus or sub-system. In such cases the most critical period of operation shall be selected under normal operating modes, such as normal use, inspection control etc.

5.5 The test shall be carried out at a single set of environmental conditions within the manufacturers specified operating range of temperature, humidity, pressure and supply voltage, unless otherwise indicated in the standards referred to in 5.1 (see also tables 1 to 7).

5.6 Tests shall be carried out in well-defined and reproducible conditions for each test.

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5.7 Tests shall be carried out at the following ports of the apparatus or sub-system where they exist :

- enclosure port (see table 1) ;
- ports for signal lines and data busses not involved in process control etc. (see table 2) ;
- ports for process measurement and control lines (see table 3) ;
- input and output d.c. power ports with current rating ≤ 100 A (see table 4) ;
- input and output d.c. power ports with current rating > 100 A (see table 5) ;
- input and output a.c. power ports rated at ≤ 100 A per phase (see table 6) ;
- input and output a.c. power ports rated at > 100 A per phase (see table 7).

5.8 The configuration and mode of operation during measurement shall be precisely noted in the test report if one is produced. ¹⁾

¹⁾ The purpose of the test report would be to support the manufacturers EC declaration of conformity.

6 Applicability of tests

NOTE : The application of tests for evaluation of immunity depend on the type of apparatus or sub-system, its configuration, ports, technology and operating conditions.

6.1 The fast transient tests shall be applied only to subsystem ports crossing the installation boundary.

6.2 It might be determined from consideration of the electrical characteristics and usage of a particular apparatus or sub-system, that some of the tests can be judged inappropriate and therefore unnecessary. In such a case the decision and justification not to test shall be recorded in the test report if one is produced. ¹⁾

6.3 Where deviations from the test methods specified in 5.1 are applied, such deviations shall be justified and recorded in the test report if one is produced. ¹⁾

7 Immunity tests

Test values shall be applied as specified in tables 1 to 7 and the performance criteria given in 8.2 shall be met as appropriate.

The tests shall be carried out as single tests in sequence in any order.

The apparatus or sub-system shall not become dangerous or unsafe as a result of the application of these tests.

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8 Evaluation of tests results

8.1 Introduction

The special requirements of the product family makes it necessary to define precise criteria for the evaluation of the immunity test results.

As stated in the scope of this standard, the basic safety requirements of the installation (lift, escalator or passenger conveyor) are specified in EN 81-1, EN 81-2 and EN 115. For this reason a performance criterion derived from the immunity levels of EN 50082-1 is deemed sufficient for most functions. However, for safety circuits, where any malfunction that may produce an unsafe operating mode cannot be tolerated higher immunity levels derived from EN 50082-2 are stipulated.

¹⁾ The purpose of the test report would be to support the manufacturers EC declaration of conformity.

8.2 Performance criteria

A functional description of the apparatus or sub-system and a definition of performance criteria, during or as a consequence of testing should be noted in the test report if one is produced¹⁾. The definition of performance criteria shall be based on the following :

Performance criterion A : The apparatus or sub-system shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus or sub-system is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus or sub-system if used as intended.

Performance criterion B : The apparatus or sub-system shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus or sub-system is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus or sub-system if used as intended.

Performance criterion C : Not used

Performance criterion D : The apparatus or sub-system shall continue to operate as intended. No degradation of performance or loss of function is allowed other than a failure into a safe mode.

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9 Documentation for the user of the sub-system or apparatus

The user shall be provided with documentary information on any measures which have to be observed to achieve compliance with this standard.

10 Notices

A notice or pictogram shall be provided in the machine room limiting the use of portable phones operating above 500 MHz if the operation of the lift, escalator or passenger conveyer would be affected.