
**Electromagnetic compatibility — Product
family standard of lifts, escalators and
moving walks — Immunity**

*Compatibilité électromagnétique — Norme pour la famille de produits:
ascenseurs, escaliers mécaniques et trottoirs roulants — Immunité*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22200 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators and moving walks*.

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Introduction

This International Standard is based upon the European Standard EN 12016:1998. This International Standard contains no technical deviations from EN 12016:1998. In the meantime, EN 12016:2004, which supersedes EN 12016:1998, has been published with new requirements on radio-frequency electromagnetic fields above 500 MHz, for surge testing on safety circuits and on radio-frequency electromagnetic fields with respect to safety devices.

Higher requirements have also been introduced on several environmental phenomena, taking into consideration the progress on EMC technology and the results of the risk assessment, and for immunity to mains power supply voltage interruptions and voltage dips. As of the date of publication of this International Standard, an ISO/TC 178 resolution has been opened to address these new requirements in the next revision of ISO 22200.

The levels of immunity and the resultant performance criteria which are given in this International Standard reflect the fact that lifts, escalators and moving walks are deemed to consist of self-contained subsystems and apparatus (e.g. machine room, lift car etc.). This International Standard is the product family standard for the electromagnetic compatibility of lifts, escalators and moving walks (immunity) and takes precedence over all aspects of the generic standard.

The related EMC product family standard for emission is ISO 22199.

The requirements of this International Standard have been specified so as to ensure a level of electromagnetic immunity that allows minimal disturbance to the product family.

Two levels of immunity 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 International Standard, equipment operating in the radio frequency (RF) field above 500 MHz has been introduced into the market. A revision to this International 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 is not used in close proximity to lift, escalator and moving walks controls.

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Electromagnetic compatibility — Product family standard of lifts, escalators and moving walks — Immunity

1 Scope

This International Standard specifies the immunity levels that represent essential EMC requirements, and test conditions for lifts, escalators and moving walks that are permanently installed in buildings and for which ISO/TC 178 has direct responsibility for the production of International Standards, in relation to continuous and transient, conducted and radiated disturbances including electrostatic discharges. It addresses commonly known EMC related hazards and hazardous situations relevant to lifts, escalators and moving walks, when they are used as intended and under the conditions foreseen by the manufacturer.

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 international Standard applies to the subsystems 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 International Standard does not apply to lighting apparatus and also other services already proven to be in conformity to the national EMC regulations.

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2 Normative references

[b6679a4ccc22/iso-22200-2006](https://standards.iteh.ai/catalog/standards/sist/16a4f698-6e37-4bca-8990-b6679a4ccc22/iso-22200-2006)

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

IEC 801-3¹⁾, *Electromagnetic Compatibility for Industrial — Process Measurement and control Equipment — Part: Radiated electromagnetic field requirements*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques — Electrical fast transient/burst immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests*

1) It is noted that the IEC 801-3 has been superseded by IEC 61000-4-3, but this later standard does not cover band widths from 27 MHz to 80 MHz and the test methods differ. The reference is kept for consistency with other tests in this International Standard.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

installation

lift, escalator or passenger conveyor installation comprising subsystems with electrical and electronic equipment and interconnections

3.2

subsystem

assembly of apparatus which is appropriate for assessment for conformity to this standard and, by means of interconnection with other subsystems, forms an installation (see Clause 4)

3.3

apparatus

assembly of components with an intrinsic function intended for use in a subsystem or installation

3.4

port

particular interface of the specified subsystem or apparatus with the external electromagnetic environment (see Figure 1)

3.5

enclosure port

boundary of the subsystem or apparatus through which electromagnetic fields can radiate or impinge

3.6

safety circuit

electric safety device conforming to national lift or escalator safety standards

3.7

general function circuit

circuitry used in a subsystem or apparatus which does not incorporate safety circuits

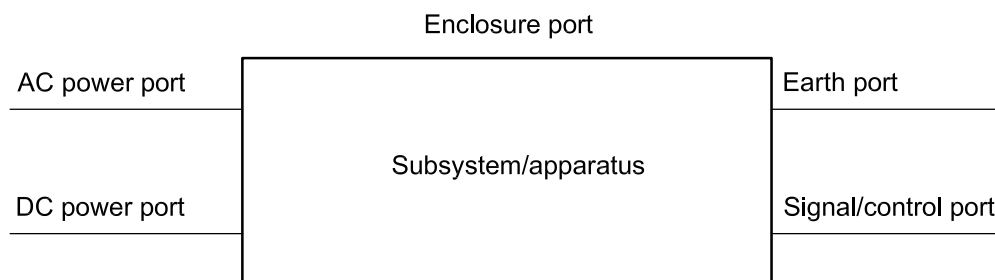


Figure 1 — Examples of ports

4 Composition of subsystems

The following assemblies of apparatus shall be considered as subsystems 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 moving walks:
 - 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 can also be considered as subsystems.

5 Test set-up

5.1 The tests, test methods, characteristics of the tests and test set-ups shall be as stated in IEC 61000-4-2, IEC 801-3, IEC 61000-4-4 and IEC 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 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 subsystem. 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.

5.7 Tests shall be carried out at the following ports of the apparatus or subsystem 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).