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ISO/TC **178**

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Electrical requirements for lifts, escalators and moving walks —

Part 1:
Electromagnetic compatibility with regard to emission

Exigences électriques pour ascenseurs, escaliers mécaniques et trottoirs roulants —

Partie 1: Compatibilité électromagnétique en ce qui concerne les émissions

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Contents

Page

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Foreword

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

This first edition of ISO 8102-1 cancels and replaces ISO 22199:2009 which has been technically revised.

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Introduction

This document is a type-C standard as stated in ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organisations, market surveillance etc.)

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e. g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

This document is based on EN 12015:2014.

The requirements of this document have been specified so as to ensure a level of electromagnetic emission that causes minimal disturbance to other equipment. The limits given in this document recognize that:

— the product family covers a total range of lifts, escalators and moving walks used in residential buildings, offices, hospitals, hotels, industrial plants, etc.; and

— lifts, escalators and passenger conveyors are deemed to have their own dedicated power supply and be connected with the consent of the supply authority to a low impedance source.

This document is the product family standard for the electromagnetic compatibility of lifts, escalators and moving walks (emission). It takes precedence over all aspects of IEC 61000-6-x. The emission limits given are on the basis that equipment of the product family range is installed both indoors and outdoors in all types of building, involves the switching of heavy currents and high inductive loads and, generally, is connected to a low-voltage system.

The levels, however, do not cover the following cases where:

a) the probability of an occurrence likely to produce emissions in excess of those which are normally experienced is extremely low, e.g. the emergency stopping of a lift, escalator or passenger conveyor under a fault condition;

b) highly susceptible apparatus is used in the close proximity of the equipment covered by this document, in which case further measures can be necessary to:

   1) reduce the electromagnetic emission to below the levels specified in this document; or

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2) increase the immunity of the affected apparatus.

The related EMC product family standard for immunity is ISO 8102-2:2017.

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Electrical requirements for lifts, escalators and moving walks —

Part 1:
Electromagnetic compatibility with regard to emission

1 Scope

This document specifies the emission limits in relation to electromagnetic disturbances and test conditions for lifts, escalators and moving walks, which are intended to be permanently installed in buildings. It is possible, however, that these limits do not provide full protection against disturbances caused to radio and TV reception when such equipment is used within distances given in Table 1.

This document is not applicable for apparatus which are manufactured before the date of its publication

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

CISPR 11, *Industrial, scientific and medical — Radio-frequency disturbance characteristic — Limits and methods of measurement*

CISPR 14-1:2016+COR1:2016, *Electromagnetic compatibility — Requirements for household appliances, electric tools and similar apparatus — Part 1: Emission*

IEC 61000-3-11, *Electromagnetic compatibility (EMC) — Part 3 11: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current up to 75 A and subject to conditional connection*

IEC 61000-3-12, *Electromagnetic compatibility (EMC) — Part 3-12: Limits — Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments*

IEC 61000-6-4, *Electromagnetic compatibility (EMC) — Par 6-4: Generic standards — Emission standard for industrial environments*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61000-6-3, IEC 61000-6-4 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

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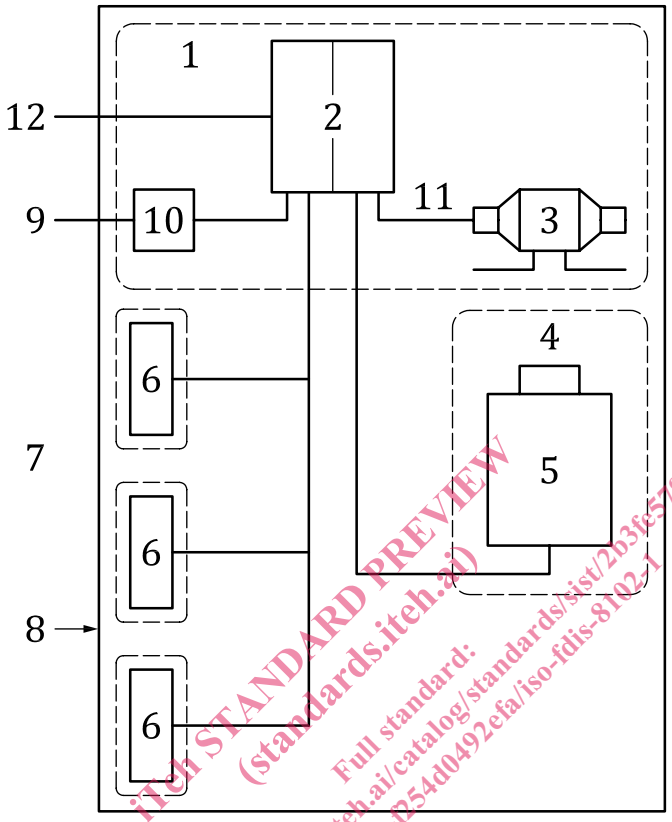
3.1
apparatus
assembly of components with an intrinsic function as defined by its manufacturer

Note 1 to entry: See Figure 1 and Figure 2.



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Key

	assembly of apparatus		
1	machinery space	7	landings
2	main control/control cabinet	8	system boundary
3	machine	9	A.C. – and/or D.C. power ports
4	door control	10	main switch
5	lift car	11	output power port
6	apparatus installed at the landing (e.g. push buttons, indicators)	12	ports for monitoring and remote alarm systems

Figure 1 — EMC model example (emission) for lift systems

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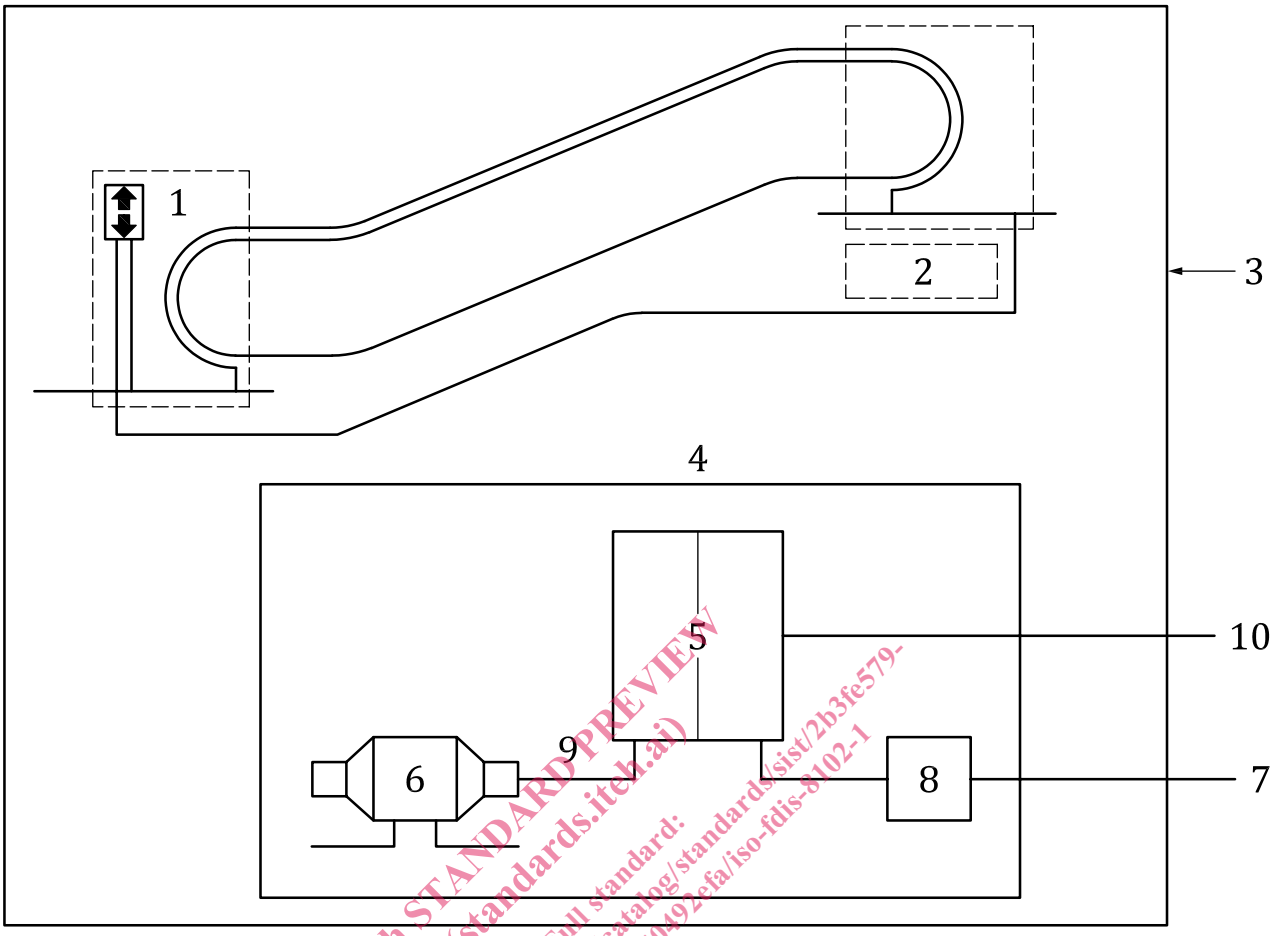

Key

	assembly of apparatus		
1	control panels	6	machine
2	machinery space (see 4 to 10)	7	A.C. and/or D.C. power ports
3	system boundary	8	main switch
4	machinery space	9	output power port
5	main control/control cabinet	10	ports for monitoring

NOTE The machinery space can also be an external room.

Figure 2 — EMC model example (emission) for escalator and moving walk systems

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3.2
assembly of apparatus
arrangement of interconnected apparatus, which can be tested together

EXAMPLE See Figure 1 and Figure 2.

3.3
balanced three-phase system (equipment)
three-phase system which is connected to the three line conductors of a three-phase supply and in which the three line or phase currents are designed to be identical in amplitude and wave-shape, each being displaced from the other two by one-third of a fundamental period

[SOURCE: IEC 61000-3-12:2011, 3.7]

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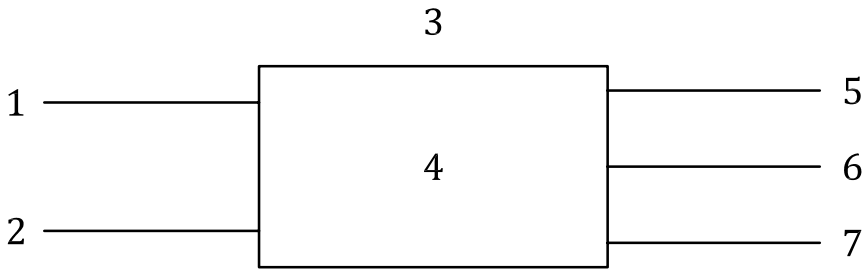
3.4
enclosure port
physical boundary of the apparatus/assembly of apparatus through which electromagnetic fields can radiate or impinge

Note 1 to entry: See Figure 3.



Key

1	AC power port	5	ground port
2	DC power port	6	signal/control port
3	enclosure port	7	machine/motor port
4	apparatus/assembly of apparatus		

Figure 3 — Examples of ports

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3.5
hybrid equipment
combination of a balanced three-phase load and one or more loads connected between phase and neutral or between phases

[SOURCE: IEC 61000-3-12:2011, 3.9]

3.6
machine/motor port
A.C./D.C. power supply port of the apparatus/assembly of apparatus containing active electronic circuits connected to the machine/motor

Note 1 to entry: Active electronic circuits comprise electronic components such as transistors, thyristors, digital ICs, microprocessors, and oscillators switching at a variable or fixed rate (switching/clock frequency). An LED display circuit connected to a battery is not an active electronic circuit if the current is limited only by a resistor or by a transistor operating linearly, but it is an active electronic circuit if the current is pulsed.

Note 2 to entry: Controlled speed drive motor supply output is an active electronic circuit. Direct on line or star-delta starting of motors, hoisting and hydraulic pump motors are not active electronic circuits.

Note 3 to entry: Controlled speed drive motor supply output is a machine/motor port. Brake coil is not machine/motor port.

3.7
partial weighted harmonic current
PWHC
total r.m.s. value of a selected group of higher order harmonic current components (in this document from order 14 to order 40), weighted with the harmonic order h, calculated as:

$$\sqrt{\sum_{h=14}^{40} h \cdot I_h^2}$$

Note 1 to entry: The partial weighted harmonic current is employed in order to ensure that the effects of the higher order harmonic currents on the results are reduced sufficiently and individual limits need not be specified.

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