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# Lifts (elevators), escalators and moving walks — Programmable electronic systems in safety related applications —

Part 2:

## Escalators and moving walks (PESSRAE)

*Ascenseurs, escaliers mécaniques et trottoirs roulants — Systèmes électroniques programmables dans les applications liées à la sécurité —  
Partie 2: Escaliers mécaniques et trottoirs roulants*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 178, *Lifts, escalators and moving walks*.

ISO 22201 consists of the following parts, under the general title *Lifts (elevators), escalators and moving walks — Programmable electronic systems in safety-related applications*:

- *Part 2: Escalators and moving walks (PESSRAE)*
- *Part 3: Life cycle guideline for Programmable Electronic Systems related to PESSRAL and PESSRAE* [Technical Report]

When revised, ISO 22201:2009, *Lifts (elevators) — Design and development of programmable electronic systems in safety-related applications for lifts (PESSRAL)*, will become Part 1.

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## Introduction

Systems comprised of electrical and/or electronic components have been used for many years to perform safety functions in most application sectors. Computer-based systems, generically referred to as programmable electronic systems (PES), are being used in many application sectors to perform non-safety functions and, increasingly, to perform safety functions. If computer system technology is to be effectively and safely exploited, it is essential that those responsible for making decisions have sufficient guidance on the safety aspects on which to make these decisions. In most situations, safety is achieved by a number of protective systems that rely on many technologies (for example mechanical, hydraulic, pneumatic, electrical, electronic, programmable electronic). Any safety strategy must therefore consider not only all the elements within an individual system (for example sensors, controlling devices and actuators) but also all the safety-related sub-systems making up the total combination of safety-related systems.

This International Standard is based upon the guidelines provided in the generic International Electro-technical Commission (IEC) Standard IEC 62061 and Comité Européen de Normalisation (CEN) Standard EN 115-1:2008.

The requirements given in this International Standard recognize the fact that the product family covers a total range of passenger and goods/passenger escalators and moving walks used in residential buildings, offices, hospitals, hotels, industrial plants, etc. This International Standard is the product family standard for escalators and moving walks and takes precedence over all aspects of the generic standard.

This International Standard sets out the product specific requirements for systems comprised of programmable electronic components and programmable electronic systems (PES) that are used to perform safety functions in escalators and moving walks. This International Standard has been developed in order that consistent technical and performance requirements and rational be specified for Programmable Electronic System in Safety-Related Application for Escalators and moving walks (PESSRAE).

Risk analysis, terminology, and technical solutions have been considered taking into account the methods of the IEC 61508 series of standards. The risk analysis of each safety function specified in [Table 1](#) resulted in the classification of electric safety functions applied to PESSRAE. [Tables 1](#) and [2](#) give the safety integrity level and functional requirements, respectively, for each electric safety function.

The safety integrity levels (SIL) specified in this International Standard may also be applied to other technologies used to satisfy the safety functions specified in this International Standard.

Harmonization with national escalator and moving walk norms:

Application of this International Standard:

The application of this International Standard is intended to be by reference within a national escalator and moving walk norm such as escalator and moving walk codes, standards, or laws. There are three reasons for this.

- To allow selective reference by national norms to specific escalator and moving walk safety functions described in this International Standard. Not all escalator and moving walk safety functions identified in this International Standard are called out in every national norm.
- To allow for future harmonization of national norms with escalator and moving walk safety functions identified in this International Standard. Because there exist some differences in the requirements for fulfilment of the safety objective of national escalator and moving walk norms and in national practice of escalator and moving walk use and maintenance, there are instances where the requirements for escalator and moving walk safety functions described in this International Standard are based on the consensus work and agreement by the ISO committee responsible for this International Standard. National bodies may choose to selectively harmonize with those escalator and moving walk safety functions that differ in the requirements called for by the existing national norm in future norm revisions.
- To allow for the application of this International Standard where escalator and moving walk safety functions are new or deviate from those specified in this International Standard. More and more,

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national escalator and moving walk legislations are moving to performance based requirements. For this reason the development of new or different escalator and moving walk safety functions can be foreseen in product specific applications. For those who require escalator and moving walk safety functions that are new or different from those specified in this International Standard, this International Standard provides a verifiable method to establish the necessary level of safety integrity for those functions.