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

**Part 3:**

**Life cycle guideline for programmable  
electronic systems related to  
PESSRAL and PESSRAE**

*Ascenseurs, escaliers mécaniques et trottoirs roulants — Conception  
et mise au point des systèmes électroniques programmables dans les  
applications liées à la sécurité —*

*Partie 3: Lignes directrices pour le cycle de vie des systèmes  
électroniques programmables liés à PESSRAL et PESSRAE*



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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.

## Introduction

This Technical Report addresses phases in the life cycle planning and actions for post-installation activities (e.g. maintenance, repair, and replacement and modification of interface) of PESSRAL and PESSRAE to help ensure the safety integrity level (SIL) over the life cycle of the system.

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

## Part 3: Life cycle guideline for programmable electronic systems related to PESSRAL and PESSRAE

### 1 Scope

This Technical Report provides additional information and process for the development of the instruction manual required by ISO 22201:2009 (PESSRAL) and ISO 22201-2 (PESSRAE) for programmable electronic systems (PES).

### 2 Normative references

ISO 22201:2009, *Lifts (elevators) — Design and development of programmable electronic systems in safety-related applications for lifts (PESSRAL)*

ISO 22201-2, *Lifts (elevators), escalators and moving walks — Programmable electronic systems in safety related applications — Part 2: Escalators and moving walks (PESSRAE)*

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### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22201:2009, ISO 22201-2 and the following apply:

#### 2.1

##### **competent maintenance person**

designated person, suitably trained, qualified by knowledge and practical experience, provided with necessary instructions and supported within their maintenance organization to enable the required maintenance operations to be safely carried out

Note 1 to entry: The competence of the maintenance person within the maintenance organization will be continuously updated

#### 2.2

##### **design equivalent**

original equipment manufacturer, or third party certified product, which fulfils same SIL rated component/subsystem design specifications but has different specifications for the non-SIL rated portion of the PES

#### 2.3

##### **functional equivalent**

product which fulfils same functional requirements with different SIL rated component/subsystem design specifications from that of the original certified product

#### 2.4

##### **maintenance organization**

company or part of a company where competent maintenance person(s) carry out maintenance operations on behalf of the owner of the installation

**2.5**

**manufacturer**

natural or legal person who takes responsibility for the design, manufacture and placing on the market of safety components for lifts or of machinery (escalator, passenger conveyor, service lift and accessible goods only lift)

**2.6**

**maintenance**

post-installation life cycle activities, including preventative, replacement, repair, and alteration (modifications)

**2.7**

**owner**

natural or legal person who has the power or disposal of the installation and takes the responsibility for its operation and use

**2.8**

**programmable electronic system**

**PES**

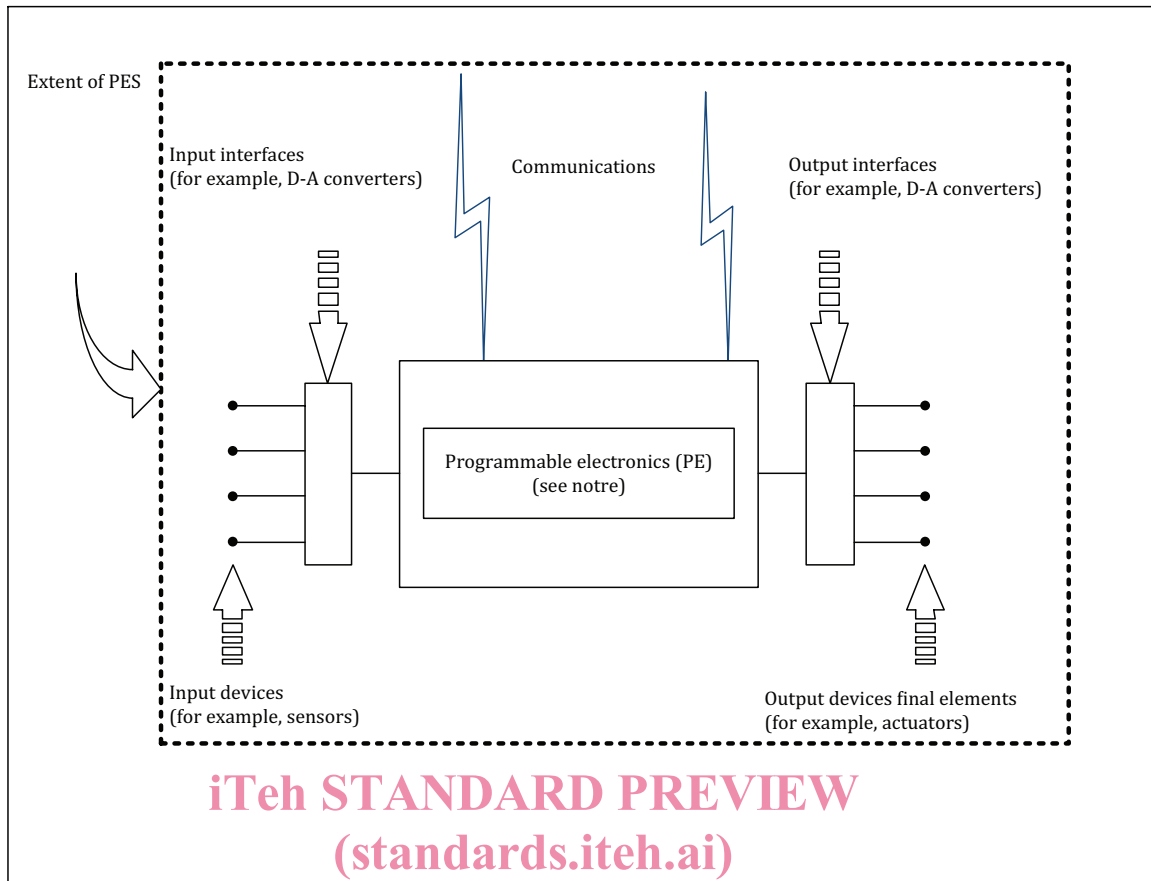
system for control, protection or monitoring based on one or more programmable electronic devices, including all elements of the system such as power supplies, sensors and other input devices, data highways and other communication paths, and actuators and other output devices

Note 1 to entry: See [Figure 1](#).

Note 2 to entry: A PES may perform functions that fulfil requirements for SIL rated and non-SIL rated function(s). The SIL rating of a function is only required to consider that portion of the PES that perform the SIL relevant functional requirements.

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IEC 3245Q2

NOTE The programmable electronics are shown centrally located but could exist at several places in the PES.

**Figure 1 — Basic PES structure**

## 2.9

### product equivalent

original equipment manufacturer or third party certified product that is a direct replacement in design, make, model, and version (built to the same production drawings) of the original certified product

## 4 Instruction manual content

This clause addresses special considerations for process and additional content of instruction manuals applied to PES as described in ISO 22201:2009 and ISO 22201-2.

### 4.1 Safety precautions

In creating an instruction manual, the developer will carry out a risk assessment to identify and address possible hazards for this phase of the life cycle of PES. (See ISO 14798 for possible hazard assessment methodology).

### 4.2 Markings, signs, pictograms and written warnings

If the risk assessment indicates that additional specific warnings are required for the purpose of maintenance, these will be affixed directly on the installation/component or, when this is not possible, in the close vicinity. Markings, signs, pictograms and written warnings will be readily understandable