



# SLOVENSKI STANDARD

## SIST EN 62290-1:2007

01-september-2007

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### Železniške naprave - Komandno - kontrolni sistemi za upravljanje urbanega transporta -- 1.del: Sistemski principi in osnovni koncepti (IEC 62290-1:2006)

Railway applications - Urban guided transport management and command/control systems -- Part 1: System principles and fundamental concepts (IEC 62290-1:2006)

Bahnanwendungen - Betriebsleit- und Zugsicherungssysteme für den städtischen schienengebundenen Personennahverkehr - Teil 1: Systemgrundsätze und grundlegende Konzepte (IEC 62290-1:2006)

Applications ferroviaires - Systemes de contrôle/commande et de gestion des transports guidés urbains -- Partie 1: Principes système et concepts fondamentaux (IEC 62290-1:2006)

**Ta slovenski standard je istoveten z: EN 62290-1:2006**

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#### **ICS:**

03.220.30	Železniški transport	Transport by rail
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

**SIST EN 62290-1:2007**

**en,fr,de**

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**Railway applications -  
Urban guided transport management  
and command/control systems  
Part 1: System principles and fundamental concepts  
(IEC 62290-1:2006)**

Applications ferroviaires -  
Systèmes de contrôle/commande  
et de gestion des transports  
guidés urbains  
Partie 1: Principes système  
et concepts fondamentaux  
(CEI 62290-1:2006)

Bahnanwendungen -  
Betriebsleit- und Zugsicherungssysteme  
für den städtischen schienengebundenen  
Personennahverkehr  
Teil 1: Systemgrundsätze  
und grundlegende Konzepte  
(IEC 62290-1:2006)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 9/949/FDIS, future edition 1 of IEC 62290-1, prepared by IEC TC 9, Electrical equipment and systems for railways, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62290-1 on 2006-11-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2007-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-11-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 62290-1:2006 was approved by CENELEC as a European Standard without any modification.

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**Annex ZA**  
(normative)

**Normative references to international publications  
with their corresponding European publications**

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.

NOTE 1 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Where a standard cited below belongs to the EN 50000 series, this European Standard applies instead of the relevant International Standard.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62236	Series	Railway applications - Electromagnetic compatibility	EN 50121	Series
IEC 62278	- <sup>1)</sup>	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)	EN 50126-1 + corr. May	1999 <sup>2)</sup> 2006
IEC 62279	- <sup>1)</sup>	Railway applications - Communications, signalling and processing systems - Software for railway control and protection systems	EN 50128	2001 <sup>2)</sup>
IEC 62280-1	- <sup>1)</sup>	Railway applications - Communication, signalling and processing systems Part 1: Safety-related communication in closed transmission systems	EN 50159-1	2001 <sup>2)</sup>
IEC 62280-2	- <sup>1)</sup>	Railway applications - Communication, signalling and processing systems Part 2: Safety-related communication in open transmission systems	EN 50159-2	2001 <sup>2)</sup>

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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**Applications ferroviaires –  
Systèmes de contrôle/commande et de gestion  
des transports guidés urbains –**

**Partie 1:  
Principes système et concepts fondamentaux**

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**Railway applications –  
Urban guided transport management  
and command/control systems –**

**Part 1:  
System principles and fundamental concepts**

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International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



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International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RAILWAY APPLICATIONS –  
URBAN GUIDED TRANSPORT MANAGEMENT  
AND COMMAND/CONTROL SYSTEMS –**

**Part 1: System principles and fundamental concepts**

**FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62290-1 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

The text of this standard is based on the following documents:

FDIS	Report on voting
9/949/FDIS	9/951/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62290 series, under the general title: *Railway applications – Urban guided transport management and command/control systems*, can be found on the IEC website. (See also introduction to this standard.)

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## INTRODUCTION

Standard IEC 62290 specifies the functional, system and interface requirements for the command, control, and management systems that are used on urban, guided passenger transport lines and networks. Trains operating on such lines may include heavy-duty underground (metros) trains, commuter trains, light rail trains, trams and regional trains. This standard does not apply to lines that are operated under specific railway regulations, unless otherwise specified by the authority having jurisdiction, however this standard will recognise the importance of maximising operational interoperability between interconnected UGTMS and non-UGTMS networks.

These systems are designated here as Urban Guided Transport Management and Command/Control Systems (UGTMS). UGTMS systems cover a wide range of applications from manual to fully automated operation. A line may be equipped with UGTMS on its full length or only partly equipped.

UGTMS requirements include consideration of the following:

- command/control and supervision of train movements;
- safety of train movement;
- safety of passengers and staff;
- factors affecting line capacity, train throughput and average train speed;
- factors affecting system availability;
- factors affecting system safety.

This standard does not specifically address security issues. However, aspects of safety requirements may apply to assuring security within the urban guided transit system.

This standard defines a complete catalogue of UGTMS functional requirements split into mandatory and optional functions, as well as customisation principles. The functions used are based on the given grade of automation taking into account the grade of line. By fulfilling the requirements, a supplier can create one or more generic applications including all mandatory functions and all or a subset of optional functions. A generic application will achieve interoperability within the defined boundary conditions. Customising a generic application will create a specific application taking into account of local conditions like track layout and headway requirements. It is in the choice of supplier and transport authority to add additional functions to a generic or specific application. These additional functions are not described in this standard.

The application of this standard is the responsibility of the transport authority concerned in accordance with the authority having jurisdiction.

This standard is a recommendation for those transport authorities, wishing to introduce interoperable, interchangeable and compatible equipment. It is the responsibility of transport authorities, in accordance with authorities having jurisdiction, to take into account their particular needs in the application of the standard.

This standard is also applicable for upgrading of existing systems. In this case, interchangeability and compatibility could be ensured only for the additional UGTMS equipment. Checking the possibility for upgrading existing equipment and the level of interoperability is the responsibility of the transport authority concerned. The definition of generic interfaces with existing equipment, which may be customised for a specific application, is within the scope of the standard.

This standard is not applicable to existing command and control systems or projects in progress prior to the effective date of this standard.

Command and control systems which do not use data communications, between wayside equipment and trains, for train protection purposes are not within the scope of this standard.

The main objective of this standard is to achieve interoperability, interchangeability and compatibility.

Application of the standard should take into account the differences between the various networks operated in different nations. Those differences include operational and regulatory requirements as well as different safety cultures.

The standard is divided into four parts.

- Part 1 “System principles and fundamental concepts” provides an introduction to the standard and deals with the main concepts, the system definition, the principles and the main functions of UGTMS (Urban Guided Transport Management and Command/Control Systems).

The three other parts correspond to the three steps required in the process of specifying UGTMS and are to be used accordingly.

- Part 2 “Functional specifications” deals with the standardisation of functions and takes into account all essential requirements and assignment of safety integrity level (SIL) (see IEC 62278) as well as functional requirement specifications (FRS).

The FRS (Functional Requirement Specification) identifies and defines the functions that are necessary to operate an urban guided transport system. Two types of functions are distinguished for a given grade of automation taking into account grade of line: mandatory functions (e.g. train detection) and optional functions (e.g. CCTV monitoring of platforms and tracks).

- Part 3 “System specifications” deals with the architecture of the system and the allocation of the requirements and functions identified in part 2 to architecture constituents (SRS).

The SRS (System Requirement Specification) specifies the architecture of a UGTMS system, with mandatory and optional constituents.

- Part 4 “Interface specifications” deals with the definition of the interfaces, as well as the data exchanged by them (FIS or/and FFFIS), for the interoperable and interchangeable constituents identified in part 3.

For interfaces between UGTMS constituents, the logical interface or FIS (Functional Interface Specification) and/or the physical and logical interface or FFFIS (Form Fit Functional Interface Specification) will be considered.

NOTE The specific structures of part 3 and part 4 will be established following completion of part 2 to accommodate optional and mandatory constituents, and to reflect local conditions. In principle, only one FIS or/and FFFIS will be defined for the same interface. However, when justified in some cases several FIS or several FFFIS will be defined for the same interface.