

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

EESTI STANDARDI EESSÕNA

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English Version

**Railway applications - Urban guided transport management and
command/control systems - Part 1: System principles and
fundamental concepts
(IEC 62290-1:2014)**

Applications ferroviaires - Systèmes de contrôle/commande
et de gestion des transports guidés urbains -
Partie 1: Principes système et concepts fondamentaux
(CEI 62290-1:2014)

Bahnanwendungen - Betriebsleit- und
Zugsicherungssysteme für den städtischen
schienengebundenen Personennahverkehr -
Teil 1: Systemgrundsätze und grundlegende Konzepte
(IEC 62290-1:2014)

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

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Foreword

The text of document 9/1913/FDIS, future edition 2 of IEC 62290-1, prepared by IEC/TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62290-1:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-05-14
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-08-14

This document supersedes EN 62290-1:2006.

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Endorsement notice

The text of the International Standard IEC 62290-1:2014 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62236	series	Railway applications - Electromagnetic compatibility	-	-
IEC 62278	-	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)	-	-
IEC 62279	-	Railway applications - Communications, signalling and processing systems - Software for railway control and protection systems	-	-
IEC 62280	-	Railway applications - Communication, signalling and processing systems - Safety related communication in transmission systems	-	-
IEC 62290-2	-	Railway applications - Urban guided transport management and command/control systems - Part 2: Functional requirements specification	EN 62290-2	-
IEC 62425	-	Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling	-	-

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	9
2 Normative references	9
3 Terms, definitions and abbreviations	9
3.1 Terms and definitions.....	10
3.2 Abbreviations.....	14
4 Concepts.....	15
4.1 Urban guided transport (UGT).....	15
4.1.1 General	15
4.1.2 Operations.....	15
4.1.3 Operational facilities	15
4.1.4 Rolling stock.....	16
4.1.5 Staff	16
4.1.6 Passengers	16
4.2 Grade of automation	16
4.2.1 Descriptions	16
4.2.2 Implementation of grades of automation	18
4.2.3 Grades of automation covered by UGTMS	18
4.3 Operation management and supervision	19
4.4 Interoperability, interchangeability, compatibility and adaptability.....	19
4.4.1 General	19
4.4.2 Interoperability.....	19
4.4.3 Interchangeability	19
4.4.4 Compatibility.....	19
4.4.5 Adaptability	20
5 System environment and boundaries	20
6 General requirements and description of the basic functions	21
6.1 General requirements	21
6.1.1 System approach.....	21
6.1.2 RAMS requirements.....	21
6.1.3 Electromagnetic compatibility	21
6.1.4 Energy saving.....	21
6.1.5 Local conditions.....	21
6.1.6 Intermodality between networks.....	22
6.1.7 Interoperability between neighbouring UGTMS fitted networks.....	22
6.1.8 Measures to ensure the movement of passengers with reduced mobility.....	22
6.1.9 Nominal mode, degraded modes, emergency situation	22
6.1.10 Basic system performances	22
6.1.11 Requirements for upgrading GOA	23
6.1.12 Requirements for adding new parts of line	23
6.2 Description of the basic functions	23
6.2.1 General	23
6.2.2 Basic functions for train operation.....	23
6.2.3 Basic functions for operation management and supervision	26
Bibliography.....	29

Figure 1 – The three-step process followed by the UGTMS standard	8
Figure 2 – Example of track layout.....	16
Figure 3 – System environment.....	20
Table 1 – Grades of automation.....	17

INTRODUCTION

IEC 62290 standard series specifies the functional, system and interface requirements for the command, control, and management systems intended to be used on urban, guided passenger transport lines and networks. This series does not apply to lines that are operated under specific railway regulations, unless otherwise specified by the authority having jurisdiction.

These systems are designated here as Urban Guided Transport Management and Command/Control Systems (UGTMS). UGTMS cover a wide range of operations needs from non-automated (GOA1) to unattended (GOA4) operation. A line may be equipped with UGTMS on its full length or only partly equipped.

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

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

This series is a recommendation for those transport authorities wishing to introduce interoperable, interchangeable and compatible equipment.

It is the responsibility of the transport authority concerned in accordance with the authority having jurisdiction to decide on how to apply this series and to take into account their particular needs.

IEC 62290 series is also intended to support applications for upgrading existing signalling and command control 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.

Application of the series 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.

This series defines a catalogue of UGTMS requirements split into mandatory and optional functions. The functions used are based on the given grade of automation. 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 specific application conditions. Customising a generic application will create a specific application taking into account of local conditions like track layout and headway requirements. It is 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 series.

According to IEC 62278, it is the responsibility of the transport authority, in agreement with the authority having jurisdiction, to decide, taking into account their risk acceptance principles to conduct specific hazard and risk analysis for each specific application. The safety levels for the functions of each specific application have to be determined by a specific risk analysis.

Terms such as "safety related command", "safety conditions", "safe station departure" are mentioned without having performed any hazard analysis.

Standard series IEC 62290 is intended to consist of 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 basic functions of UGTMS (Urban Guided Transport Management and Command/Control Systems).

The three other parts correspond to the three steps (see Figure 1) required in the process of specifying UGTMS and are to be used accordingly.

- Part 2 “Functional requirements specification” specifies the functional requirements associated to the basic functions provided by Part 1, within the system boundaries and interfaces as defined in Figure 3 of Part 1.

The FRS (Functional Requirements 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: mandatory functions (e.g. train detection) and optional functions (e.g. interfaces to passenger information and passenger surveillance systems). Requirements of functions have the same allocation, unless they are marked otherwise.

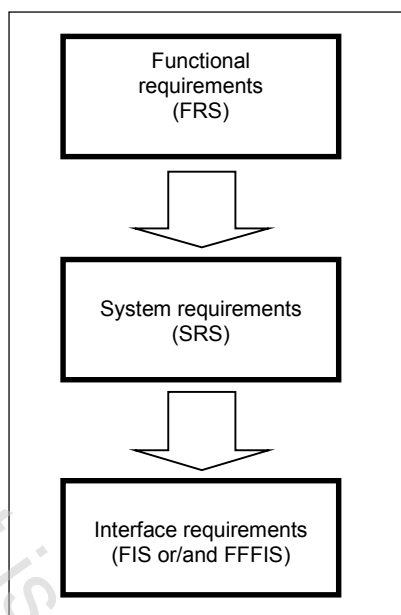
- Part 3 (under consideration) “System requirements specifications” deals with the architecture of the system and the allocation of the requirements and functions identified in part 2 to architecture constituents.

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

- Part 4 (under consideration) “Interface specifications” deals with the definition of the interfaces, as well as the data exchanged by them (FIS 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.



IEC 1339/06

Figure 1 – The three-step process followed by the UGTMS standard

Requirements are those necessary to fulfil all operational needs for safe and orderly operation requested by transport authorities without regard to technical solutions.

The chosen level of detail in describing requirements enables customers as well as authorities having jurisdiction to be assured that generic applications delivered by different suppliers will cover at least the same functionality as specified in this part of IEC 62290.

Requirements which are established by this series are indicated clearly with a requirement identification number related to the function to be covered.