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Railway applications - Urban guided transport management and command/control systems - Part 3: System requirements specification

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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**Railway applications - Urban guided transport management and
command/control systems - Part 3: System requirements
specification
(IEC 62290-3:2019)**

Applications ferroviaires - Systèmes de contrôle/commande
et de gestion des transports guidés urbains - Partie 3:
Spécification des exigences système
(IEC 62290-3:2019)

Bahnanwendungen - Betriebsleit- und
Zugsicherungssysteme für den städtischen
schienengebundenen Personennahverkehr - Teil 3:
Systembezogene Anforderungsspezifikation
(IEC 62290-3:2019)

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EN IEC 62290-3:2019 (E)**European foreword**

The text of document 9/2531/FDIS, future edition 1 of IEC 62290-3, 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 IEC 62290-3:2019.

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) 2020-07-24
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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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NOTE 1 Where 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 62290-1	2014	Railway applications - Urban guided transport management and command/control systems - Part 1: System principles and fundamental concepts	EN 62290-1	2014
IEC 62290-2	2014	Railway applications - Urban guided transport management and command/control systems - Part 2: Functional requirements specification	EN 62290-2	2014



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INTERNATIONAL STANDARD

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Partie 3: Spécification des exigences système**



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INTERNATIONAL STANDARD

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**Railway applications – Urban guided transport management and
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Part 3: System requirements specification**

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Partie 3: Spécification des exigences système**

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	9
2 Normative references	9
3 Terms, definitions and abbreviated terms	10
3.1 Terms and definitions.....	10
3.2 Abbreviated terms.....	10
4 UGTMS system architecture and non-functional requirements	12
4.1 Overall system architecture.....	12
4.2 General description of UGTMS subsystems	13
4.2.1 General	13
4.2.2 UGTMS Wayside Subsystem (WS)	13
4.2.3 UGTMS Onboard Subsystem (OBS)	14
4.2.4 UGTMS Spot Transmission Subsystem (SPTS)	14
4.2.5 UGTMS Data Communication Subsystem (DCS).....	14
4.2.6 UGTMS Operation Control Subsystem (OCS)	14
4.3 External equipment in the UGTMS environment.....	15
4.3.1 General	15
4.3.2 Infrastructure related equipment (INF)	15
4.3.3 Trackside signalling related equipment (TSE)	15
4.3.4 Station related equipment (SE).....	15
4.3.5 External interlocking related equipment (EIXL)	16
4.3.6 Traction Power control system related equipment (TPCS)	16
4.3.7 Wayside voice communication related equipment (WVC).....	16
4.3.8 Wayside CCTV surveillance related equipment (WCS).....	16
4.3.9 Wayside passenger information related equipment (WPI)	16
4.3.10 Maintenance system related equipment (MS).....	16
4.3.11 Operations Control HMI related equipment (OHMI).....	16
4.3.12 Operation planning system related equipment (OPS).....	17
4.3.13 Central voice communication related equipment (CVC).....	17
4.3.14 Central CCTV surveillance related equipment (CCS)	17
4.3.15 Central passenger information related equipment (CPI).....	17
4.3.16 Train related equipment (TR).....	17
4.3.17 Train HMI related equipment (THMI).....	17
4.3.18 Onboard voice communication related equipment (OBVC)	18
4.3.19 Onboard CCTV surveillance related equipment (OBCS).....	18
4.3.20 Onboard passenger information related equipment (OBPI)	18
4.4 Hypotheses for UGTMS architecture	18
5 UGTMS rail network description	19
5.1 General.....	19
5.2 Line section	19
5.3 Track segment	20
5.4 Connecting rules between track segments	20
5.5 Structure and content of the configuration data related to the rail network description	21
6 Requirement allocation and description	22

6.1	Functional and non-functional requirement allocation to UGTMS subsystems	22
6.1.1	General principles	22
6.1.2	Allocation of functional requirements from IEC 62290-2:2014	24
6.2	Summary of allocated functions and subfunctions from IEC 62290-2:2014	252
6.3	Identification of interfaces for the UGTMS subsystems	259
6.3.1	General	259
6.3.2	Identification of interfaces between UGTMS subsystems	259
6.3.3	Interfaces between UGTMS subsystems and the environment	265
Figure 1	– The three-step process followed by the UGTMS standard	7
Figure 2	– UGTMS system environment (as defined in IEC 62290-1)	12
Figure 3	– UGTMS system architecture, external systems and external interfaces	13
Figure 4	– UGTMS concept of line section	19
Figure 5	– UGTMS track segment definition	20
Figure 6	– UGTMS track segment chaining	21
Figure 7	– Example for the description of 6.1.2	23
Table 1	– Summary of allocated functions and subfunctions from IEC 62290-2:2014	252
Table 2	– Identification of interfaces between UGTMS subsystems	259
Table 3	– Interfaces between UGTMS subsystems and the environment	265

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3: System requirements specification

FOREWORD

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International Standard IEC 62290-3 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
9/2531/FDIS	9/2544/RVD

Full information on the voting for the approval of this International 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.

The committee has decided that the contents of this publication will remain unchanged until the stability 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,
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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 herein 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 such as 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 like "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 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 “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 Requirement 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 FISs or several FFFISs will be defined for the same interface.

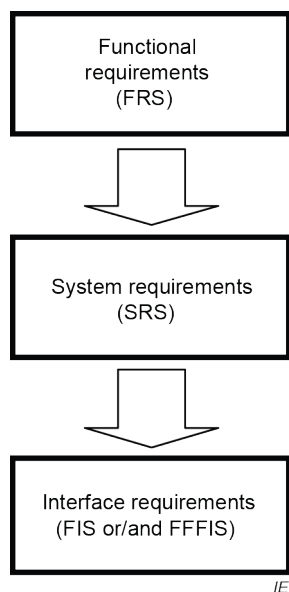


Figure 1 – The three-step process followed by the UGTMS standard

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.

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

Part 3: System requirements specification

1 Scope

This part of IEC 62290 specifies the system architecture for Urban Guided Transport Management and Command/Control systems (UGTMS) as defined in IEC 62290-1 and IEC 62290-2, and the allocation of functions and requirements defined in IEC 62290-2 to the different UGTMS subsystems (designated as system constituents in IEC 62290-1 and IEC 62290-2), for use in urban guided passenger transport lines and networks.

This document is applicable for new lines or for upgrading existing signalling and command control systems.

This document is applicable to applications using:

- continuous data transmission
- continuous supervision of train movements by train protection profile
- localisation by reporting trains, and optionally by external wayside equipment for non-reporting ones (e.g. in case of mixed operation or degraded operation)

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

The functional allocations of the UGTMS subsystems are mandatory (forming a sort of core system) or optional, according to the mandatory/optional functions and requirements defined in IEC 62290-2.

This document is applicable as a basis to define FIS and FFFIS. For specific applications, some elements may be added to meet the requirements coming from additional functions or equipment.

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.

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

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