

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN IEC 62290-3:2025 sisaldab Euroopa standardi EN IEC 62290-3:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.05.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN IEC 62290-3:2025 consists of the English text of the European standard EN IEC 62290-3:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 16.05.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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EUROPEAN STANDARD

EN IEC 62290-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2025

ICS 45.060.01

Supersedes EN IEC 62290-3:2019; EN IEC 62290-3:2019/AC:2020-07

English Version

**Railway applications - Urban guided transport management and
command/control systems - Part 3: System requirements
specification
(IEC 62290-3:2025)**

Applications ferroviaires - Systèmes de contrôle/commande
et de gestion des transports guidés urbains - Partie 3:
Spécification des exigences système
(IEC 62290-3:2025)

Bahnwendungen - Betriebsleit- und
Zugsicherungssysteme für den städtischen
schienengebundenen Personennahverkehr - Teil 3:
Systembezogene Anforderungsspezifikation
(IEC 62290-3:2025)

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European foreword

The text of document 9/3168/FDIS, future edition 2 of IEC 62290-3, prepared by TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62290-3:2025.

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) 2026-05-31
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2028-05-31

This document supersedes EN IEC 62290-3:2019 and all of its amendments and corrigenda (if any).

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NORME INTERNATIONALE

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

**Applications ferroviaires – Systèmes de contrôle/commande et de gestion des
transports guidés urbains –
Partie 3: Spécification des exigences système**



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IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

**Applications ferroviaires – Systèmes de contrôle/commande et de gestion des
transports guidés urbains –
Partie 3: Spécification des exigences système**

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INTERNATIONALE

ICS 45.060.01

ISBN 978-2-8327-0308-3

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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	11
4.1 Overall system architecture.....	11
4.2 Hypotheses for UGTMS architecture	12
4.3 General description of UGTMS subsystems	13
4.3.1 General	13
4.3.2 UGTMS wayside subsystem (WS).....	13
4.3.3 UGTMS onboard subsystem (OBS).....	13
4.3.4 UGTMS spot transmission subsystem (SPTS)	13
4.3.5 UGTMS data communication subsystem (DCS)	14
4.3.6 UGTMS operation control subsystem (OCS)	14
4.4 External equipment in the UGTMS environment.....	14
4.4.1 General	14
4.4.2 Infrastructure related equipment (INF)	14
4.4.3 Trackside signalling related equipment (TSE)	15
4.4.4 Station related equipment (SE).....	15
4.4.5 External interlocking related equipment (EIXL)	15
4.4.6 Traction power control system related equipment (TPCS).....	15
4.4.7 Maintenance system related equipment (MS).....	16
4.4.8 Operations control HMI related equipment (OHMI).....	16
4.4.9 Operation planning system related equipment (OPS).....	16
4.4.10 Voice communication system related equipment (VCS)	16
4.4.11 CCTV surveillance system related equipment (CSS).....	16
4.4.12 Passenger information system related equipment (PIS)	17
4.4.13 Train related equipment (TR).....	17
4.4.14 Train HMI related equipment (THMI).....	17
5 UGTMS rail network description	18
5.1 General.....	18
5.2 Line section	18
5.3 Track segment	19
5.4 Connecting rules between track segments	20
5.5 Structure and content of the configuration data related to the rail network description	20
6 Requirement allocation and description	21
6.1 Functional and non-functional requirement allocation to UGTMS subsystems	21
6.1.1 General principles	21
6.1.2 Allocation of functional requirements from IEC 62290-2:2024	23
6.2 Summary of allocated functions and subfunctions from IEC 62290-2.....	251
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	266
	Bibliography	267
	Figure 1 – The three-step process followed by the UGTMS standard	7
	Figure 2 – UGTMS system environment (as defined in IEC 62290-1)	11
	Figure 3 – UGTMS system architecture, external systems and external interfaces	12
	Figure 4 – UGTMS concept of line section	19
	Figure 5 – UGTMS track segment definition	19
	Figure 6 – UGTMS track segment chaining	20
	Figure 7 – Example for the description of 6.1.2	22
	Table 1 – Summary of allocated functions and subfunctions from IEC 62290-2:2024	252
	Table 2 – Identification of interfaces between UGTMS subsystems	260
	Table 3 – Interfaces between UGTMS subsystems and the environment	266

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**RAILWAY APPLICATIONS – URBAN GUIDED TRANSPORT
MANAGEMENT AND COMMAND/CONTROL SYSTEMS –****Part 3: System requirements specification**

FOREWORD

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

This second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the last maintenance of IEC 62290-1 is taken into account, in particular the changes made for describing the external environment of UGTMS;
- b) the last maintenance of IEC 62290-2 is taken into account, as IEC 62290-3 is using the requirements defined in the latter. Therefore, the document reflects the deleted functions and requirements in IEC 62290-2, and also the new functions and requirements.

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

Draft	Report on voting
9/3168/FDIS	9/3199/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

For a better readability of the text, some elements of subclause 6.1.2 are in italic and bold characters to highlight the headlines of the functional tree of IEC 62290-2 (to avoid any confusion for the reader with the numbering of clauses and subclauses of IEC 62290-3), whose order and hierarchy is followed to do the allocation of requirements from this document IEC 62290-2. The mention of applicability depending on GOA of some functions having a condition to be mandatory is provided in bold characters.

Moreover, again for a question of a better readability of the text, the titles of the *functional tree of IEC 62290-2 standard* are prefixed with "FCN".

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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

The IEC 62290 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.

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.

The IEC 62290 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 objectives of this series are as follows:

- to provide a baseline system description and functional requirements specification for a transport authority to use in a request for proposal;
- to provide recommendations for those transport authorities wishing to acquire an interoperable or interchangeable system.

It is the responsibility of the transport authority concerned to decide on how to apply the IEC 62290 series and to take into account their particular needs.

The 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.

The IEC 62290 series defines a catalogue of UGTMS requirements split into mandatory and optional functions. The functions used are based on the given grade of automation. Most of the functions characterized as mandatory are considered with no condition. Some specific functions have a condition to be mandatory (this condition being generally related to the use of an external equipment by UGTMS). 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 the IEC 62290 series.

According to IEC 62278, it is the responsibility of the transport authority 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 are determined by a specific risk analysis.

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

The IEC 62290 series is intended to consist of four parts:

- IEC 62290-1, "System principles and fundamental concepts", provides an introduction to the IEC 62290 series and deals with the main concepts, the system definition, the principles and the basic functions of UGTMS.

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

- IEC 62290-2, "Functional requirements specification", specifies the functional requirements associated to the basic functions provided by IEC 62290-1, within the system boundaries and interfaces as defined in IEC 62290-1:2024, Figure 3.

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. manage stabling). Requirements of functions have the same allocation, unless they are marked otherwise.

- IEC 62290-3, "System requirements specifications", deals with the architecture of the system and the allocation of the requirements and functions identified in IEC 62290-2 to UGTMS equipment.

The SRS (system requirement specification) specifies the architecture of a UGTMS system, with mandatory and optional UGTMS equipment.

- IEC 62290-4¹, "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 UGTMS equipment identified in IEC 62290-3.

For interfaces between UGTMS equipment, 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 structure of IEC 62290-4 will be established to accommodate optional and mandatory UGTMS equipment, and to reflect local conditions. In principle, only one FIS or 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.

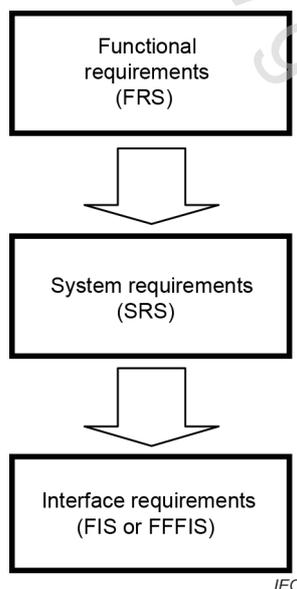


Figure 1 – The three-step process followed by the UGTMS standard

¹ Under consideration.

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 transport authorities to be assured that generic applications delivered by different suppliers will cover at least the same functionality as specified in this document.

Requirements which are established by the IEC 62290 series are indicated clearly with a requirement identification number related to the function to be covered.

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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, and
- localisation by onboard UGTMS equipment (reporting trains), and optionally by external wayside (and optionally onboard) device.

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 can 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 62290-1:2024, *Railway applications – Urban guided transport management and command/control systems – Part 1: System principles and fundamental concepts*

IEC 62290-2:2024, *Railway applications – Urban guided transport management and command/control systems – Part 2: Functional requirements specification*