BS EN IEC 62290-1:2025

BSI Standards Publication

Railway applications — Urban guided transport management and command/control systems

Part 1: System principles and fundamental concepts

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National foreword

This British Standard is the UK implementation of EN IEC 62290-1:2025. It is identical to IEC 62290-1:2025. It supersedes BS EN 62290-1:2014, which will be withdrawn on 31 May 2028.

The UK participation in its preparation was entrusted to Technical Committee GEL/9, Railway Electrotechnical Applications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62290-1

May 2025

ICS 45.060.01

Supersedes EN 62290-1:2014

English Version

Railway applications - Urban guided transport management and command/control systems - Part 1: System principles and fundamental concepts (IEC 62290-1:2025)

Applications ferroviaires - Systèmes de contrôle/commande et de gestion des transports guidés urbains - Partie 1: Principes système et concepts fondamentaux (IEC 62290-1:2025)

Bahnanwendungen - Betriebsleit- und Zugsicherungssysteme für den städtischen schienengebundenen Personennahverkehr - Teil 1: Systemgrundsätze und grundlegende Konzepte (IEC 62290-1:2025)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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

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European foreword

The text of document 9/3166/FDIS, future edition 3 of IEC 62290-1, 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 62290-1:2025.

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 62290-1:2014 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62290-1:2025 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 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.

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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 62236	series	Railway applications - Electromagnetic compatibility	EN 50121	series
IEC 62278	-	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)	EN 50126	-
IEC 62279	-	Railway applications - Communications, signalling and processing systems - Software for railway control and protection systems	EN 50128	-
IEC 62280	-	Railway applications - Communication, signalling and processing systems - Safety related communication in transmission systems	EN 50159	-
IEC 62290-2	-	Railway applications - Urban guided transport management and command/control systems - Part 2: Functional requirements specification	EN IEC 62290-2	-
IEC 62425	-	Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling	EN 50129	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1: System principles and fundamental concepts

FOREWORD

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IEC 62290-1 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways. It is an International Standard.

This third edition cancels and replaces the second edition published in 2014. This edition constitutes a technical revision.

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

a) Figure 3, giving the system environment of UGTMS, has been amended to reflect the adaptation of it;
b) external equipment for which no requirement is described in the IEC 62290 series has been removed;

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c) new external equipment having such requirements (like the washing machine) has been added.

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

Draft	Report on voting
9/3166/FDIS	9/3197/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.

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.

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

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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 main 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 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 specification", 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 requirements specification) specifies the architecture of a UGTMS system, with mandatory and optional UGTMS equipment.

- IEC 62290-4[1], "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) 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.

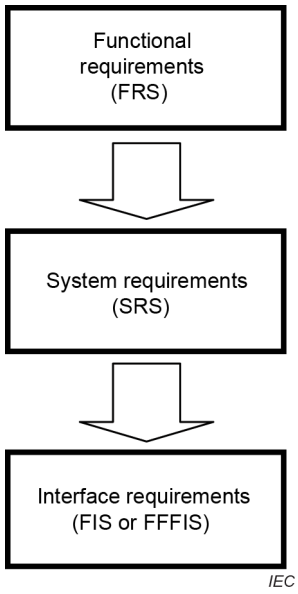

Figure 1 – Three-step process followed by the UGTMS series

[1] Under consideration.

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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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