

**Railway applications - Urban guided transport
management and command/control systems - Part 2:
Functional requirements specification**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62290-2:2011 sisaldab Euroopa standardi EN 62290-2:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.09.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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**Railway applications -
Urban guided transport management and command/control systems -
Part 2: Functional requirements specification
(IEC 62290-2:2011)**

Applications ferroviaires -
Systèmes de contrôle/commande et de
gestion des transports guidés urbains -
Partie 2: Spécification des exigences
fonctionnelles
(CEI 62290-2:2011)

Bahnanwendungen -
Betriebsleit- und Zugsicherungssysteme
für den städtischen schienengebundenen
Personennahverkehr -
Teil 2: Funktionale
Anforderungsspezifikation
(IEC 62290-2:2011)

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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 9/1529/FDIS, future edition 1 of IEC 62290-2, 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 62290-2 on 2011-07-26.

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

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) 2012-04-26
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2014-07-26

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62290-2:2011 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 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62290-1	-	Railway applications - Urban guided transport management and command/control systems - Part 1: System principles and fundamental concepts	EN 62290-1	-

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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 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 assuring security within the urban guided transit system.

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

This series defines a 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 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 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 series.

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

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.

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

The safety levels for the functions of each specific application have to be determined by a specific hazard analysis.

This series 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 series.

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. The definition of generic interfaces with existing equipment is taken into account in the IEC 62290 series.

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.

Standard series IEC 62290 will 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 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 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 4 of Part 1. Safety level allocation can only be done after a hazard and risk analysis has been carried out.

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 taking into account grade of line: 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.

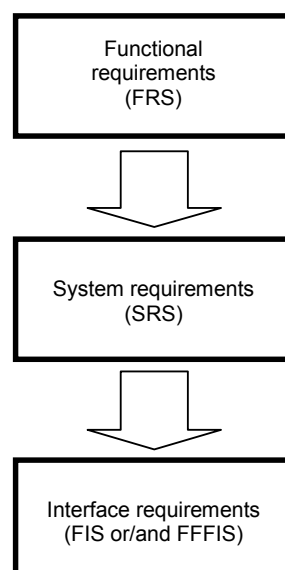
- Part 3 (under consideration) “System specifications” deals with the architecture of the system and the allocation of the requirements and functions identified in part 2 to architecture constituents (SRS).

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

- Part 4 (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 891/11

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

Functional requirements are defined as such requirements, which are 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 functional 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.

Functional 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 2: Functional requirements specification

1 Scope

This part of IEC 62290 specifies the functional requirements specification of UGTMS (Urban Guided Transport Management and Command/Control Systems). IEC 62290-2 is applicable for new lines or for upgrading existing signalling and command control systems.

This part of IEC 62290 is applicable to applications using:

- spot or continuous data transmission
- continuous supervision of train movements by train protection profile
- localisation of trains by wayside equipment or reporting trains.

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 outside the scope of this standard.

In this part 2 of the standard, the functional requirements set the framework to which detailed functions should be added to define any complete application, either generic or specific.

Because of that, this part of the standard is not intended to be used as a basis for the definition of complete SRS, FIS nor FFFIS.

2 Normative references

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 amendments) applies.

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

3 Terms, definitions and abbreviations

For the purposes of this document, the following terms, definitions and abbreviations apply.

3.1 Terms and definitions

3.1.1

additional non-standard function

function to be adapted to the specific requirements of each transport authority (due to local rules or specific needs of the transport authority); the components affected by this function are not necessarily interchangeable nor interoperable