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Railway applications - Signalling and control systems for non UGTMS urban rail systems

Applications ferroviaires - Systèmes de signalisation et de contrôle/commande des transports guidés urbains non UGTMS



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**Railway applications -
Signalling and control systems for non UGTMS urban rail systems**

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

Draft	Report on voting
9/3211/FDIS	9/3236/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.

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INTRODUCTION

This document covers systems restricted to on-sight train operation and non-automated train operations (respectively TOS/GOA0 and NTO/GOA1 with intermittent supervision as defined in the IEC 62290 series) and covers signalling on tramways and other urban rail systems which do not fall directly within either existing railway or highway standards. This would typically be for parts of systems which are along off-street alignment, and which operate to line-of-sight, or automatic interlock signalling with intermittent supervision. This document does not conflict with the scope and requirements of the IEC 62290 series.

This document proposes the minimum required functions for signalling systems for guided urban systems operating line-of-sight and non-automated operations.

This document does not set any operational rules, any system architecture rules or any rules on the application conditions of technical systems for the different categories of urban rail systems.

In this document, GOA1a describes a GOA1 with intermittent supervision systems.

This document covers all GOA0 and GOA1a urban guided transport systems.

Such systems require more functionalities and better safety levels than those provided by traffic signal controllers but avoid the requirements inherent in railway signalling systems which can be restrictive both operationally and financially from a tramway perspective.

Numerous countries use these systems to control points, manage train movements along single lines and prevent conflicts at junctions as well as on grade crossings with road and pedestrian traffic. Whilst adopting much of the functional requirements and safeguards used in standard traffic signal controllers, there is additional functionality required and currently in use to fulfil the needs of urban rail.

Mainline railway signalling systems include most of such additional functionality, but in terms of this and the required safety integrity, they are not ideally suited to the needs of urban rail.

The two fundamentally different approaches for the design of signalling systems, both of which are currently in use to some extent on most systems, are:

- technology as used for traffic signal controllers, or
- technology as used for signalling systems to be developed in accordance with safety integrity levels suitable for tramways and urban rail.

This could leave system owners and operators vulnerable to challenge, particularly after an incident, because there is no relevant accepted international standard to justify appropriate use of such equipment.

1 Scope

This document specifies minimum functional requirements for urban rail signalling and control systems (for use in urban guided passenger transport lines and networks)

- which operate on line-of-sight or using automatic interlock signalling with intermittent supervision,
- not covered by the existing UGTMS standard IEC 62290 series, and
- not forming a part of an urban traffic control system but possibly interfaced with such systems.

The document is restricted to minimum functional requirements which allow users to define more specific requirements based on the given framework of the system requirements at top level. This document is not applicable to command-and-control systems for urban rail using continuous data transmission and continuous supervision of train movements by train protection profile (already covered by the IEC 62290 series).

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 Terms and definitions

3.1.1

external device

device providing external demand inputs to signalling control elements

Note 1 to entry: The methods of making these demand inputs can vary from simple manual inputs to automatic data derived inputs from train-borne equipment.

EXAMPLE Remote inputs from control rooms, input from road traffic controller, request transmitted from a train.

3.1.2

level crossing **level grade crossing**

crossing of an urban rail system and a road at the same level

Note 1 to entry: In some EU member states when a tramway on its own alignment crosses a road used by other traffic, it is not normally termed a "level crossing" as defined in national road and rail traffic legislation, but is usually termed a "road junction" or "crossing at grade". References to level crossing in this document equate to a crossing at grade when the urban rail system under consideration is a tramway.

Note 2 to entry: The term "road" covers walkways, cycle paths, highways, etc.

[SOURCE: IEC 60050-821:2017, 821-07-01, modified – "a railway" has been replaced with "an urban rail system". Notes 1 and 2 to entry have been added.]