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BSI Standards Publication

Railway applications – Signalling and control systems for non UGTMS Urban Rail systems

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National foreword

This British Standard is the UK implementation of EN 50668:2019.

The UK participation in its preparation was entrusted to Technical Committee GEL/9/1, Railway Electrotechnical Applications - Signalling and communications.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Railway applications - Signalling and control systems for non UGTMS Urban Rail systems

Applications ferroviaires - Systèmes de signalisation et de contrôle pour systèmes ferroviaires urbains non-UGTMS

Bahnanwendungen - Signal- und Zugsteuerungssysteme für städtische Schienenbahnsysteme ohne UGTMS

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document [EN 50668:2019] has been prepared by CLC/SC 9XA "Communication, signalling and processing systems" of CLC/TC 9X "Electrical and electronic applications for railways".

The following dates are fixed:

- latest date by which the existence of this document has to be announced at national level (doa) 2020-01-08
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-07-08
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-07-08

This document has been prepared under a mandate (M/486) given to CENELEC by the European Commission and the European Free Trade Association.

The 2013 CEN/CLC Guide 26, *Railway applications – Preparation of standards for urban rail systems design, construction, manufacture, operations and maintenance*, has been used as guidance for the preparation of this document.

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Introduction

This document covers systems restricted to on-sight train operation (TOS/GOA0) and non-automated train operations (NTO/GOA1 with intermittent supervision), 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 train control (i.e. as defined in the EN 62290 series, GOA0 and GOA1 with intermittent supervision systems). This document does not conflict with the scope and requirements of the EN 62290 series.

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

This document does not set any operational rules, any system architecture or any rules for 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 functionality and a better safety level than that provided by traffic signal controllers (as set out in EN 12675) but avoid the requirements inherent in railway signalling systems which from a tramway perspective may be restrictive operationally and financially.

Numerous states in Europe use these systems to control points, manage train movements along single lines and prevent conflicts at junctions as well as on at 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 a lot 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 are:

- technology as used for traffic signal controllers, or
- technology as used for signalling systems to be developed in accordance with Safety Integrity Levels sufficient for tramways and urban rail,

both of which are currently in use to some extent on most systems. This may leave system owners and operators vulnerable to challenge, particularly after an incident, because there is no relevant accepted standard to justify appropriate use of such equipment.

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1 Scope

This document specifies minimum functional requirements for urban rail signalling and control systems:

- which operate on line of sight or using automatic interlock signalling with intermittent train control,
- not covered by the existing UGTMS standard EN 62290 series,
- 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 EN 62290 series).

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviations

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

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

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

3.1 Terms and definitions

3.1.1

external device

device providing external demand inputs to elements of signalling control

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.

Note 2 to entry: Example of external device:

- Remote inputs from control rooms;
- Input from road traffic controller;
- A request transmitted from a train.

3.1.2

level crossing

level grade crossing

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

Note 1 to entry: In some member states when a tramway on its own alignment crosses a road used by other traffic it does not normally do so as a level crossing within the meanings of 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.

[SOURCE: IEC 60050-821:2017, 821-07-01, modified – Note 1 to entry has been added.]