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BSI Standards Publication

Railway applications — Communication, signalling and processing systems — European Rail Traffic Management System — Driver Machine Interface

Part 1: General principles for the presentation of ERTMS/ETCS/GSM-R information

bsi.

National foreword

This Published Document is the UK implementation of CLC/TS 50459-1:2021. It supersedes PD CLC/TS 50459-1:2015, which is withdrawn.

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 committee manager.

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Applications ferroviaires - Systèmes de signalisation, de télécommunications et de traitement - Système européen de gestion du trafic ferroviaire - Interface de conduite - Partie 1 : Principes généraux pour la présentation des informations ERTMS/ETCS/GSM-R

Bahnanwendungen - Telekommunikationstechnik, Signaltechnik und Datenverarbeitungssysteme - Europäisches Leitsystem für den Schienenverkehr - Mensch-Maschine Schnittstelle - Teil 1: Ergonomische Grundsätze für die Darstellung von ERTMS/ETCS/GSM-R Informationen

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CENELEC

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

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European foreword

This document (CLC/TS 50459-1:2021) has been prepared by CLC/SC 9XA “Communication, signalling and processing systems”, of Technical Committee CLC/TC 9X “Electrical and electronic applications for railways”.

This document supersedes CLC/TS 50459-1:2015.

CLC/TS 50459-1:2021 includes the following significant technical changes with respect to CLC/TS 50459-1:2015:

— updated general principles for the presentation of ERTMS/ETCS/GSM-R information in line with ERA_ERTMS_015560;

— updated ergonomic arrangements in line with the EN 16186 series.

This document is expected to be read in conjunction with ERA_ERTMS_015560 “*ETCS Driver Machine Interface”* and the EN 16186 series, “*Railway applications — Driver's Cab*”.

The CLC/TS 50459 series consists of the following parts under the general title “*Railway applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface*”:

— *Part 1: General principles for the presentation of ERTMS/ETCS/GSM-R information*;

— *Part 2: Ergonomic arrangements of GSM-R information*;

— *Part 3: Ergonomic arrangements of non ETCS information*.

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 mandate given to CENELEC by the European Commission and the European Free Trade Association.

Introduction

The CLC/TS 50459 series contains the ergonomic arrangements for the display of information on the Control and Command Display (CCD) and Train Radio Display (TRD). Most items are illustrated with an example.

The reasons for defining the ergonomics of the Driver-Machine Interface (DMI) are as follows:

— achieving harmonized and coherent presentation for ERTMS/ETCS and NTC information. Given the large number of NTC's requiring the use of the ERTMS/ETCS DMI, only a harmonized approach is feasible;

— defining DMI ergonomics that is compatible with agreed interoperable ERTMS specifications;

— to reduce the risk of incorrect operation by a driver;

— facilitating train operation with a unified DMI, hence reducing the cost of driver traini

— better understanding of the tasks to be performed;

— increasing speed and accuracy of driver actions.

1 Scope

This document describes how ERTMS and non-ERTMS information will be arranged and displayed from an ergonomic point of view. More specifically, it covers information that is out of the scope of ERA_ERTMS_015560. This document describes more ergonomic details than currently provided by the ERTMS/GSM-R specifications.

This document defines the ergonomics for the Driver-Machine Interface (DMI) for the following applications:

— stand-alone ERTMS/GSM-R Train Radio Systems;

— non-ERTMS/ETCS Train Control Systems;

— other technical systems currently provided on the rolling stock.

The ergonomics covers:

— the general arrangements (dialogue structure, sequences, layout philosophy, colour philosophy),

— the symbols,

— the audible information,

— the data entry arrangements.

This document is limited to ergonomic considerations and does not define the technology to be used for the implementation but it does give guidelines about how to implement the requirements using different technology types (soft keys, touch screen device, LCD, electromechanical instruments, indicator lamps, etc.).

This document is applicable to all trains fitted with the ERTMS/ETCS and also to trains fitted with train radio (GSM-R) DMI.

The scope of this document is to define ergonomic principles for the interface between the driver and the above listed applications.

TDD is out of scope of the CLC/TS 50459 series.

For human factor items, such as display of information, display location, viewing angles and organization of the screens, see EN 16186 series.

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.

EN 16186-2:2017, *Railway applications - Driver's cab - Part 2: Integration of displays, controls and indicators*

EN 16186-3, *Railway applications - Driver's cab - Part 3: Design of displays*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp