



NSAI
Standards

Irish Standard Recommendation
S.R. CLC/TS 50459-1:2021

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

S.R. CLC/TS 50459-1:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

CLC/TS 50459-1:2021

Published:

2021-03-19

This document was published under the authority of the NSAI and comes into effect on:

2021-04-08

ICS number:

03.220.30

13.180

35.240.60

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

S.R. CLC/TS 50459-1:2021 is the adopted Irish version of the European Document CLC/TS 50459-1:2021, 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

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

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CLC/TS 50459-1

March 2021

ICS 03.220.30; 13.180; 35.240.60

Supersedes CLC/TS 50459-1:2015

English Version

**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**

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

This Technical Specification was approved by CENELEC on 2021-02-08.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

Contents	Page
European foreword.....	4
Introduction.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms, definitions and abbreviated terms.....	6
3.1 Terms and definitions.....	6
3.2 Abbreviated terms.....	8
4 General ergonomic principles.....	8
4.1 Principles for presentation.....	8
4.1.1 General.....	8
4.1.2 Presentation techniques.....	8
4.1.3 Text output.....	9
4.1.4 Characters.....	10
4.1.5 Redundancy concept.....	10
4.2 Principles for dialogue.....	10
4.2.1 General.....	10
4.2.2 Suitability for the task.....	11
4.2.3 Self-explanatory.....	11
4.2.4 Controllability.....	11
4.2.5 Conformity with user expectations.....	11
4.2.6 Error guidance.....	11
4.3 Physical parameters.....	11
4.4 Arrangement of information.....	11
4.4.1 General.....	11
4.4.2 Window title.....	11
4.4.3 Buttons.....	12
4.5 Symbols.....	12
4.6 Navigation buttons.....	12
4.7 Menu structure.....	12
4.8 Data input.....	12
4.9 Languages.....	12
4.10 Audible information.....	13
4.10.1 General.....	13
4.10.2 Sounds.....	13
Bibliography.....	21

Figures

Figure 1 — S feedback - click..... 14
Figure 2 — S feedback 1 - down..... 15
Figure 3 — S feedback 2 - up 15
Figure 4 — S feedback 3 - down and up..... 16
Figure 5 — S info – Information on screen..... 17
Figure 6 — Driving too fast..... 18
Figure 7 — S2 – Speed warning 18
Figure 8 — S3 – End of intervention 19

Tables

Table 1 — S feedback - click..... 13
Table 2 — S feedback 1 – down 14
Table 3 — S feedback 3 – up..... 15
Table 4 — S feedback 3 – down and up 16
Table 5 — S info – Information on screen..... 17
Table 6 — Driving too fast..... 17
Table 7 — S2 – Speed warning 18
Table 8 — S3 – End of intervention 19

CLC/TS 50459-1:2021

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 training;
- better understanding of the tasks to be performed;
- increasing speed and accuracy of driver actions.

CLC/TS 50459-1:2021

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>

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-