



BSI Standards Publication

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

Part 3: Ergonomic arrangements of non ETCS information

National foreword

This Published Document is the UK implementation of CLC/TS 50459-3:2021. It supersedes PD CLC/TS 50459-3:2016, which is withdrawn.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.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 539 05299 2

ICS 03.220.30; 13.180; 35.240.60; 45.060.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 March 2021.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

English Version

**Railway applications - Communication, signalling and processing
systems - European Rail Traffic Management System - Part 3:
Ergonomic arrangements of non ETCS information**

Applications ferroviaires - Systèmes de signalisation, de
télécommunications et de traitement - Système européen
de gestion du trafic ferroviaire - Interface de conduite -
Partie 3: Principes généraux pour la présentation des
informations non ETCS

Bahnanwendungen - Telekommunikationstechnik,
Signaltechnik und Datenverarbeitungssysteme -
Europäisches Leitsystem für den Schienenverkehr - Teil 3:
Ergonomische Anordnung der Nicht-ETCS 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	6
Introduction	7
1 Scope	8
2 Normative references	8
3 Terms, definitions and abbreviated terms	8
3.1 Terms and definitions	8
3.2 Abbreviated terms	9
4 General principles	9
4.1 Purpose of document	9
4.1.1 General.....	9
4.1.2 Ergonomic arrangements of areas of the ETCS layout.....	10
4.1.3 ETCS objects.....	11
4.1.4 Non ETCS objects.....	11
4.2 Audible information for non ETCS systems.....	11
4.3 Data entry	11
5 Non ETCS symbols	11
5.1 General requirements for unified DMI service.....	11
5.2 Symbols for other train functions	12
Annex A (informative) Integration of NTC and/or other on-board systems	13
A.1 Usage of screen areas	13
A.2 NTC LZB/PZB	13
A.2.1 LZB/PZB - Scope and field of specification.....	13
A.2.2 LZB/PZB - Overview	13
A.2.3 LZB/PZB - Positioning onto the grid array.....	15
A.2.3.1 LZB/PZB - Area description.....	15
A.2.3.2 LZB/PZB - Speed and distance monitoring – supervision status	16
A.2.4 LZB/PZB - ETCS and NTC information shown on a LZB/PZB default window.....	16
A.2.4.1 LZB/PZB - Introduction	16
A.2.4.2 LZB/PZB - ETCS objects.....	16
A.2.4.3 LZB/PZB - NTC objects.....	16
A.2.5 LZB/PZB - Sub-level windows	17
A.2.5.1 LZB/PZB - Introduction	17
A.2.5.2 LZB/PZB - Menu windows	18
A.2.6 LZB/PZB - Symbols	22
A.2.6.1 LZB/PZB - Level symbols.....	22
A.2.6.2 LZB/PZB - Mode symbols.....	22
A.2.6.3 LZB/PZB - Status symbols	22
A.2.6.4 LZB/PZB - Orders and announcement of track condition symbols	24
A.2.6.5 LZB/PZB - Planning information symbols.....	24
A.2.6.6 LZB/PZB - Navigation symbols	24
A.2.6.7 LZB/PZB - Supervision symbols.....	24
A.2.6.8 LZB/PZB - Driver request symbols.....	25
A.2.7 LZB/PZB - Audible information	25
A.2.7.1 LZB/PZB - General.....	25
A.2.7.2 PLZB_S1 - SCHNARRE.....	25
A.2.7.3 PLZB_S2 - HUPE	25

A.2.7.4	PLZB_S3 - EMERGENCY_BRAKE_INTERVENTION	25
A.2.8	LZB/PZB - List of system status messages.....	26
A.3	UK National Train Control	26
A.4	NTC ATC2	26
A.4.1	ATC2 - Scope and field of specification	26
A.4.2	ATC2 - Overview	26
A.4.3	ATC2 - Area description	27
A.4.4	ATC2 - Sub-level windows	28
A.4.4.1	ATC2 - Introduction	28
A.4.4.2	ATC2 - NTC objects	28
A.5	NTC SCMT	28
A.5.1	SCMT - Scope and field of specification	28
A.5.2	SCMT - Overview	29
A.5.3	SCMT - Area description	29
A.5.4	SCMT - ETCS and NTC Information shown on an ETCS default window	31
A.5.5	SCMT - Sub-Level Windows	31
A.5.5.1	SCMT - Introduction	31
A.5.5.2	SCMT - ETCS objects	31
A.5.5.3	SCMT - NTC objects	31
A.5.5.4	SCMT - Windows.....	31
A.5.5.5	SCMT - VMC data entry window	32
A.5.5.6	SCMT - OM window	33
A.5.5.7	SCMT - ATTO window.....	34
A.5.5.8	SCMT - TRIP window	35
A.5.5.9	SCMT - Announcement window	36
A.5.6	SCMT - Symbols	37
A.5.6.1	SCMT - Level symbols	37
A.5.6.2	SCMT - Mode symbols	37
A.5.6.3	SCMT - Touch key symbols	41
A.5.6.4	SCMT - Orders and announcements	43
A.5.6.5	SCMT - Planning information symbols	43
A.5.6.6	SCMT - Navigation symbols.....	43
A.5.6.7	SCMT - Settings symbols.....	43
A.5.6.8	SCMT - Driver request symbols	43
A.5.7	SCMT - Audible information	44
A.5.8	SCMT - List of system status messages	45
A.6	NTC SHP	45
A.6.1	SHP - Scope and field of specification	45
A.6.2	SHP - Overview	45
A.6.3	SHP - Area description	46
A.6.4	SHP - ETCS and NTC information shown on a SHP default window	46
A.6.4.1	SHP - ETCS objects	46
A.6.4.2	SHP - NTC objects	47
A.6.5	SHP - Sub-level windows	47
A.6.5.1	SHP - Introduction	47
A.6.5.2	SHP - Default window.....	47
A.6.6	SHP - Symbols	48
A.6.6.1	SHP - Level symbols	48
A.6.6.2	SHP - Mode symbols.....	48
A.6.6.3	SHP - Status symbols.....	48
A.6.6.4	SHP - Orders and announcement of Track Condition Symbols.....	49
A.6.6.5	SHP - Planning information symbols.....	49
A.6.6.6	SHP - Driver request symbols	49
A.7	NTC JKV	49
A.7.1	JKV - Scope and field of specification	49

A.7.2	JKV - Overview.....	50
A.7.3	JKV - Area description.....	51
Annex B (informative) Sounds for NTC and/or other on-board systems		53
B.1	General	53
B.2	Other train functions	53
B.2.1	S9 - Driver activity warning.....	53
B.3	NTC	54
B.3.1	LZB/PZB audible information	54
B.3.1.1	PLZB_S1 - SCHNARRE.....	54
B.3.1.2	PLZB_S2 - HUPE	55
B.3.1.3	PLZB_S3 - EMERGENCY_BRAKE_INTERVENTION	56
B.3.2	UK National Train Control audible information.....	57
B.3.3	ATC2 audible information.....	57
B.3.4	SCMT audible information.....	57
B.3.5	SHP audible information.....	57
B.3.6	JKV audible information.....	57
Bibliography.....		58

Figures

Figure 1	— The sub areas of the ERTMS/ETCS layout (touch screen technology).....	10
Figure 2	— The sub areas of the ERTMS/ETCS layout (soft key technology)	11
Figure A.1	— The sub areas of the LZB/PZB layout (touch screen technology).....	14
Figure A.2	— The sub areas of the LZB/PZB layout (soft key technology).....	15
Figure A.3	— LZB/PZB data entry window (1st window) in touch screen technology.....	18
Figure A.4	— LZB/PZB data entry window (1st window) in softkey technology	19
Figure A.5	— LZB/PZB data validation window in touch screen technology	19
Figure A.6	— LZB/PZB data validation window in softkey technology	20
Figure A.7	— LZB/PZB data view window in touch screen technology	21
Figure A.8	— LZB/PZB data view window in softkey technology	21
Figure A.9	— The sub areas of the ATC2 layout (touch screen technology).....	26
Figure A.10	— The sub areas of the ATC2 layout (soft key technology).....	27
Figure A.11	— The sub areas of the SCMT layout (touch screen technology)	29
Figure A.12	— SCMT arrangement of area D.....	30
Figure A.13	— SCMT in mode HS before transistion.....	31
Figure A.14	— SCMT window in touch screen technology.....	32
Figure A.15	— SCMT VMC data entry window in touch screen technology	33
Figure A.16	— SCMT OM window in touch screen technology.....	34
Figure A.17	— SCMT ATTO window in touch screen technology.....	35
Figure A.18	— SCMT TRIP window in touch screen technology.....	36
Figure A.19	— SCMT in mode HS before transistion.....	37
Figure A.20	— SCMT brake release example window in touch screen technology	44
Figure A.21	— SCMT warning acknowledgement example window in touch screen technology	44

Figure A.22 — The sub areas of the SHP layout (touch screen technology).....	45
Figure A.23 — The sub areas of the SHP layout (soft key technology).....	46
Figure A.24 — SHP default window in touch screen technology.....	47
Figure A.25 — SHP default window in softkey technology.....	48
Figure A.26 — The sub areas of the JKV layout (touch screen technology)	50
Figure A.27 — The sub areas of the JKV layout (soft key technology)	51
Figure B.1 — Wave of the audible information ‘Driver Activity Warning’	53
Figure B.2 — Wave of the audible information ‘PLZB_S1 – SCHNARRE	54
Figure B.3 — Wave of the audible information ‘LZB-SCHNARRE_DAUER	54
Figure B.4 — Wave of the audible information ‘LZB-SCHNARRE_INTERMIT_1.....	55
Figure B.5 — Wave of the audible information ‘LZB-SCHNARRE_INTERMIT_2.....	55
Figure B.6 — Wave of the audible information ‘PLZB_S2 – HUPE	56
Figure B.7 — Wave of the audible information ‘LZB_HUPE	56
Figure B.8 — Wave of the audible information ‘LZB_HUPE_F1	56
Figure B.9 — Wave of the audible information ‘LZB_HUPE_F2	56

Tables

Table A.1 — LZB/PZB terms in figures.....	17
Table A.2 — PZB terms in figures.....	18
Table A.3 — Level symbols for LZB/PZB	22
Table A.4 — Status symbols for LZB/PZB	22
Table A.5 — LZB supervision symbols	25
Table A.6 — ATC2 terms in figures	28
Table A.7 — SCMT terms in figures.....	31
Table A.8 — Level symbols for SCMT (C8)	37
Table A.9 — Mode symbols for SCMT (B8 / B9)	38
Table A.10 — Symbols for SCMT_D15 .. 39	38
Table A.11 — Symbols for touch keys (SCMT_G6..10).....	41
Table A.12 — Level symbols for SHP	48
Table A.13 — Symbols for SHP operation	49
Table A.14 — Symbols for SHP Radio Stop.....	49
Table B.1 — S9 - Driver activity warning.....	53
Table B.2 — LPZB_S1 - SCHNARRE	54
Table B.3 — LPZB_S2 - HUPE	55

European foreword

This document (CLC/TS 50459-3:2021) has been prepared by CLC/SC 9XA “Communication, signalling and processing systems”, of Technical Committee CENELEC TC 9X “Electrical and electronic applications for railways”.

This document supersedes CLC/TS 50459-3:2016.

CLC/TS 50459-3:2021 includes the following significant technical changes with respect to CLC/TS 50459-3:2016:

- Update general principles for the presentation of non ETCS information correlated with ERA document ERA_ERTMS_015560.
- Update ergonomic arrangements with EN 16186 series.

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

This document should be read in conjunction with ERA_ERTMS_015560:2016 “ETCS Driver Machine Interface” and EN 16186 series, “Railway applications — Driver's Cab”.

This document is Part 3 of a series with the following parts:

- CLC/TS 50459-1, *General principles for the presentation of ERTMS/ETCS/GSM-R information*
- CLC/TS 50459-2, *Ergonomic arrangements of ERTMS/GSM-R information*
- CLC/TS 50459-3, *Ergonomic arrangements of non ETCS information*

This part of the CLC/TS 50459 series contains the ergonomic arrangements of non ETCS information.

Annex A of this document shows examples of existing NTC DMI layouts.

Annex B of this document lists the sound examples for NTC and other train functions (not exhaustive).

1 Scope

This document describes from an ergonomic point of view how non ETCS information are arranged and displayed on the CCD. More specifically, it covers information that is not within the scope of ERA document ERA_ERTMS_015560.

This document describes two possible technologies for implementing the ETCS DMI namely touch screen and soft key.

National systems not integrated within ETCS DMI are not within the scope of this document.

Redundancy concepts are not within the scope of this document.

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 16186-3:2016+A1:2018, *Railway applications - Driver's cab - Part 3: Design of displays*

CLC/TS 50459-1, *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*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in CLC/TS 50459-1 and the following apply.

ISO and IEC maintain terminological databases 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>

3.1.1

ETCS DMI

CCD that allows communication between ETCS on-board equipment and the driver

3.1.2

ETCS default window

total image screen area with the allocation of objects, text messages and buttons as described in ERA ERTMS 015560 Chapter 8 and 9

3.1.3

NTC default window

shown in NTC operation (Level NTC, modes SN or NL)

Note 1 to entry: The layout of an NTC default window could differ from an ETCS default window.