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Bahnanwendungen – Telekommunikationstechnik, Signaltechnik und Datenverarbeitungssysteme – Europäisches Leitsystem für den Schienenverkehr – Mensch-Maschine Schnittstelle Teil 5: Symbole

This Technical Specification was approved by CENELEC on 2005-05-07.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

This Technical Specification was prepared by SC 9XA, Communication, signalling and processing systems, of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the vote and was approved by CENELEC as CLC/TS 50459-5 on 2005-05-07.

The following date was fixed:

– latest date by which the existence of the CLC/TS has to be announced at national level (doa) 2005-11-07

This Technical Specification has been prepared under mandates M/024 and M/334 given to CENELEC by the European Commission and the European Free Trade Association.

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Introduction

This Technical Specification forms Part 5 of a series, the other parts being:

CLC/TS 50459-1	for ergonomic principles for the presentation of ERTMS/ETCS/GSM-R information
CLC/TS 50459-2	for ergonomic arrangements of ERTMS/ETCS information
CLC/TS 50459-3	for ergonomic arrangements of ERTMS/GSM-R information
CLC/TS 50459-4	for data entry procedure for ERTMS/ETCS/GSM-R
CLC/TS 50459-6	for audible information for ERTMS/ETCS/GSM-R

This document does not cover symbols to be used for STM.

1 Scope

This Technical Specification describes from an ergonomic point of view how ERTMS information shall be arranged and displayed. This Technical Specification describes more ergonomic details than currently provided by the ERTMS/ETCS/GSM-R specifications.

This Technical Specification defines the ergonomics for the Driver-Machine Interface (DMI) for the ERTMS/ETCS Train Control System, and for the integrated ERTMS/GSM-R Train Control and Train Radio Systems, and for the stand alone ERTMS/GSM-R Train Radio Systems and for other technical systems currently provided on the engines.

The ergonomics covers the:

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

— symbols;

— audible information;

— data entry arrangements.

The aims of the ERTMS/ETCS/GSM-R Train Control and Train Radio Systems are standardised systems facilitating interoperable movement of trains and permitting economies of scale in procurement and operations. The objective of this Technical Specification is to define the minimum requirements on the DMI that are necessary to enable these objectives to be achieved. Hence the Technical Specification is limited to ergonomic considerations and does not define the technology to be used for the implementation.

The reasons for defining the ergonomics of the DMI are as follows:

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

— defining Driver-Machine Interface ergonomics that is compatible with agreed interoperable ERTMS specifications.

— to reduce the risk of incorrect operation by a driver working with different trains fitted with ERTMS/ETCS and ERTMS/GSM-R.

— facilitating train operation with a unified ergonomics, hence reducing the cost of driver training.

This Technical Specification is applicable on all trains fitted with the ERTMS/ETCS and also for trains fitted with train radio (GSM-R) DMI.

The scope of this part of the Technical Specification (Part 5) is to define the symbols used with the ERTMS/ETCS and the ERTMS/GSM-R DMI. The actual use of the symbols is depending on the availability of the function addressing the symbol.

2 Normative references

The following referenced documents are indispensable for the application 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.

CLC/TS 50459-1, *Railways applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface – Part 1: Ergonomic principles for the presentation of ERTMS/ETCS/GSM-R information*

CLC/TS 50459-2, *Railways applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface – Part 2: Ergonomic arrangements of ERTMS/ETCS information*

CLC/TS 50459-3, *Railways applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface – Part 3: Ergonomic arrangement of ERTMS/GSM-R information*

CLC/TS 50459-4, *Railways applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface – Part 4: Data entry for the ERTMS/ETCS/GSM-R systems*

UIC 651, *Layout of driver's cabs in locomotives, railcars, multiple-unit trains and driving trailers*

3 Terms and definitions

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

4 Symbols and abbreviations

For the purposes of this document, the symbols and abbreviations given in CLC/TS 50459-1 apply.

5 Use of symbols

5.1 Principles

The principles underlying the design and use of the symbols presented in the following clauses are described within CLC/TS 50459-1.

The appearance of the symbols in this Technical Specification is normative. However, this does not imply that the symbol must be shown on the DMI if a function is considered to be optional. The explicit meaning is, that if the function is available, it must be presented in the way described in this document. If it is not needed, then the DMI does not show the information.

If a symbol is used, its form, shape, colour and size shall be as specified in this Technical Specification (CLC/TS 50459-5). Other information in Tables 1 to 11 is for reference. See also CLC/TS 50459-1 for further information.

The symbol area codes for the ERTMS/ETCS symbols refer to Part 2 of this Technical Specification; for the ERTMS/GSM-R symbols to Part 3 of this Technical Specification.

5.2 ERTMS/ETCS symbols

NOTE The “Symbol Area” column in the descriptions below is included for clarity and ease of understanding.

For good visibility all symbols are presented with the recommended background colour ‘dark blue’. In an application the symbols shall have transparent background.

In general, symbols for area D2/3/4 with the size 20 x 20 have their reference point at the bottom of the symbol itself.

5.2.1 Monitor symbols (group 1)

Monitor symbols are presented in Table 1.

Table 1 — Monitor symbols

Symbol number	Symbol form/shape	Symbol and colour description[A]	Symbol size (cells)	Symbol area(s) (as defined in CLC/TS 50459-2)	Remarks
1.1		Brake applied; grey	52 x 21	E1	
1.2	Reserved				
1.3		Service brake intervention or emergency brake intervention; red	52 x 21	C9	
1.4		Passenger emergency intervention; red	52 x 21	E5	
1.5a		Drivers safety device intervention; red	52 x 21	E3	Drivers Safety Device has intervened
1.5b		Drivers safety device warning; yellow	52 x 21	E3	Driver can still activate Drivers Safety Device
1.6a	Reserved				
1.6b		Intermittent transmission (level 1); grey	52 x 21	C8	
1.6c		Intermittent transmission (level STM); grey	52 x 21	C8	For STM level the text ‘STM’ can be replaced by the distinct abbreviation of the corresponding STM (e.g. KVB, PZB, ASFA etc.)
1.7a	Reserved				
1.7b		Continuous transmission (level 2); grey	52 x 21	C8	
1.7c		Continuous transmission (level STM); grey	52 x 21	C8	For STM level the text ‘STM’ can be replaced by the distinct abbreviation of the corresponding STM (e.g. TVM, LZB, ATB, etc.)
1.7d		Level 0; grey	52 x 21	C8	

Symbol number	Symbol form/shape	Symbol and colour description[A]	Symbol size (cells)	Symbol area(s) (as defined in CLC/TS 50459-2)	Remarks
1.7e		Continuous transmission (level 3); grey	52 x 21	C8	
1.8a		Doors open; grey	32 x 32	E6-E15	
1.8b		Doors opening; grey	32 x 32	E6-E15	
1.8c		Doors open; red	32 x 32	E6-E15	
1.9a		Doors closed; grey	32 x 32	E6-E15	
1.9b		Doors closing; grey	32 x 32	E6-E15	
1.10a		Close Air Conditioning intake; grey	20 x 20	D2/3/4	
1.10b		Open Air Conditioning intake; grey	20 x 20	D2/3/4	
1.10c		Close Air Conditioning intake; yellow	20 x 20	D2/3/4	
1.10d		Open Air Conditioning intake; yellow	20 x 20	D2/3/4	
1.10e		Close Air Conditioning intake; grey	32 x 32	B3/4/5 & E6-15	If used in area E6-15: Air Conditioning intake closed

Symbol number	Symbol form/shape	Symbol and colour description[A]	Symbol size (cells)	Symbol area(s) (as defined in CLC/TS 50459-2)	Remarks
1.10f		Open Air Conditioning intake; grey	32 x 32	B3/4/5 & E6-15	If used in area E6-15: Air Conditioning intake opened
1.10g		Close Air Conditioning intake; yellow	32 x 32	B3/4/5 & E6-15	If used in area E6-15: Air Conditioning intake closed
1.10h		Open Air Conditioning intake; yellow	32 x 32	B3/4/5 & E6-15	If used in area E6-15: Air Conditioning intake opened
1.11	Reserved				
1.12		Poor adhesion; grey	32 x 32	E6-E10	
1.13		Emergency stop; red	52 x 21	E4	
1.14		Lack of radio communication; red	52 x 21	E4	

A The colours in the table are referring to the colour definitions in CLC/TS 50459-1. grey is no. 3, yellow is no. 8, red is no. 10, dark blue is no. 6 .For good visibility all symbols are presented with the recommended background colour ‘dark blue’. In an application the symbols shall have transparent background.

5.2.2 Mode symbols (group 2)

Mode symbols are presented in Table 2.

Table 2 — Mode symbols

Symbol number	Symbol form/shape	Symbol and colour description[A]	Symbol size (cells)	Symbol area(s) (as defined in CLC/TS 50459-2)	Remarks
2.1a		Shunt mode; grey	32 x 32	B7	
2.1b		Announcement for shunting; yellow	20 x 20	D2/3/4	
2.1c		Acknowledge-ment for shunting; yellow	32 x 32	C1	Always with flashing frame acc. to Part 1
2.2a		Override function is active; grey	32 x 32	C1	
2.2b		Trip; red	32 x 32	B7	
2.2.c		Trip Acknowledge-ment; yellow	32 x 32	C1	Always with flashing frame acc. to Part 1
2.2d		Post trip; grey	32 x 32	B7	
2.3a		Drive on sight; grey	32 x 32	B7	
2.3b		Announcement for Drive on sight; yellow	20 x 20	D2/3/4	
2.3c		Acknowledge-ment for Drive on sight; yellow	32 x 32	C1	Always with flashing frame acc. to Part 1