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Železniške naprave – Komunikacijski, signalni in procesni sistemi – Evropski sistem za vodenje železniškega prometa – Vmesnik človek-stroj – 6. del: Zvočne informacije

(istoveten CLC/TS 50459-6:2005)

Railway applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface – Part 6: Audible information

ICS 03.220.30; 13.180; 35.240.60

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TECHNICAL SPECIFICATION

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English version

Railway applications – Communication, signalling and processing systems – European Rail Traffic Management System – Driver-Machine Interface Part 6: Audible information

Applications ferroviaires – Systèmes de signalisation, de télécommunications et de traitement – Système européen de gestion du trafic ferroviaire – Interface de conduite Partie 6: Sons

Bahnanwendungen – Telekommunikationstechnik, Signaltechnik und Datenverarbeitungssysteme – Europäisches Leitsystem für den Schienenverkehr – Mensch-Maschine Schnittstelle Teil 6: Akustische Informationen

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

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Ref. No. CLC/TS 50459-6:2005 E

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 50459-6 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.

Contents

Introduction

This Technical Specification forms Part 6 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 50459-5 for symbols for ERTMS/ETCS/GSM-R

These Technical Specifications contain the ergonomic arrangements of information on the ERTMS DMI Display. Most items are illustrated with an example.

This document does not cover audible information to be used for STM.

The files, in a WAV-format, containing the examples for the sounds can be heard by clicking the corresponding figures. The WAV-format file is only informative. The examples are given only to be sure that the sounds provided by the real system are similar.

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),
– the symbols,
– the audible information,
– the 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 6 of the Technical Specification is to define the audible information used with the ERTMS/ETCS DMI and with the ERTMS/GSM-R DMI.

The operational procedures for the GSM-R radio are out of scope of this document.

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, *Railway 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, *Railway 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, *Railway applications - Communication, signalling and processing systems - European Rail Traffic Management System - Driver-Machine Interface — Part 3: Ergonomic arrangements of ERTMS/GSM-R information*

CLC/TS 50459-4, *Railway applications - Communication, signalling and processing systems - European Rail Traffic Management System - Driver-Machine Interface — Part 4: Data Entry Procedure for ERTMS/ETCS/GSM-R*

IEC 60050-801, *International Electro-technical Vocabulary – Part 801: Acoustics and electro-acoustics*

UIC 651, *Layout of driver's cab 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 and the followings apply.

3.1
duration
time elapsed from the start to the stop of an elementary sound of the audible information

3.2
sound group
set of sounds relating to similar events

4 Symbols and abbreviations

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

5 Audible information

The use of the audible information shall not be confused with the use of flashing information as defined in CLC/TS 50459-1, 4.1.1.4. Audible information is used to draw the driver attention from the outside to the display.

Audible information is considered as complementary information for ERTMS/ETCS.

Audible information is classified in ten timbres. The timbre allows the driver to identify if the audible information is a feedback, a warning, an incoming call or something else.

The level of each audible information shall be at least 13 dB above the ambient noise in the cab.

The loudspeakers shall be placed according with the architecture of the cab to obtain the best audible perception.

The loudness of each signal should be individually adjustable in accordance with the cab environment; especially during installation.

The bandpass shall not be above 7 kHz.

Audible information can be generated simultaneously. For audible information generated in loops the transients shall be avoided.

The audible information shall be as described in this Part 6 of the Technical Specification. Voice output shall only be used optionally as secondary, additional information

5.1 ERTMS audible information

5.1.1 S feedback 1 - down

Audible feedback while pressing the finger on a button on the DMI (button down).

Table 1 — S feedback 1 - down

Feedback	Sound group:	Feedback
Action required: No	Tone(s)	2
	Duration:	0,05 s
Urgency: information	Frequency sequence:	Not applicable
	Intensity sequence:	Not applicable
	Tempo:	Not applicable
	Presentation:	Once

Figure 1 displays the wave of this audible information.

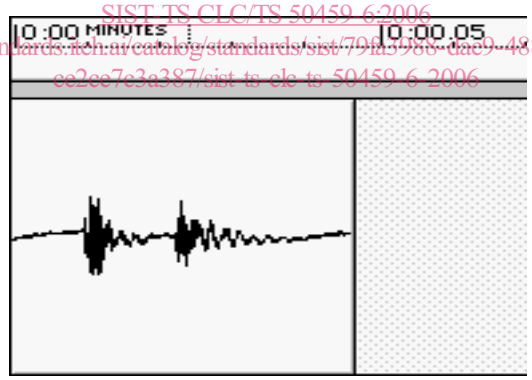

Figure 1 — S feedback 1

Reference information:

Click Figure 1 to hear the sound (file: S_feedback1_down.wav).

5.1.2 S feedback 2 - up

Audible feedback while lifting the finger from a button on the DMI (button up).

Table 2 — S feedback 2 - up

Feedback	Sound group:	Feedback
Action required: No	Tone(s)	2
	Duration:	0,06 s
Urgency: information	Frequency sequence:	Not applicable
	Intensity sequence:	Not applicable
	Tempo:	Not applicable
	Presentation:	Once

Figure 2 displays the wave of this audible information.

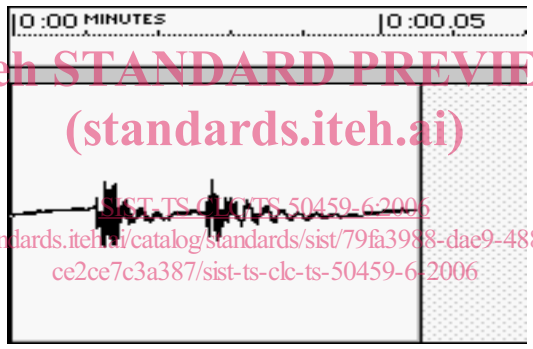

Figure 2 — S feedback 2

Reference information:

Click Figure 2 to hear the sound (file: S_feedback2_up.wav).

5.1.3 S feedback 3 - down and up

Audible feedback while activating a button on the DMI.

The following table describes the main characteristics of this audible information.

Table 3 — S feedback 3 - down and up

Feedback	Sound group:	Feedback
Action required: No	Tone(s)	2
	Duration:	0,16 s + 0,07 s = 0,23 s
Urgency: information	Frequency sequence:	Not applicable
	Intensity sequence:	Not applicable
	Tempo:	Not applicable
	Presentation:	Once

Figure 3 displays the wave of this audible information.

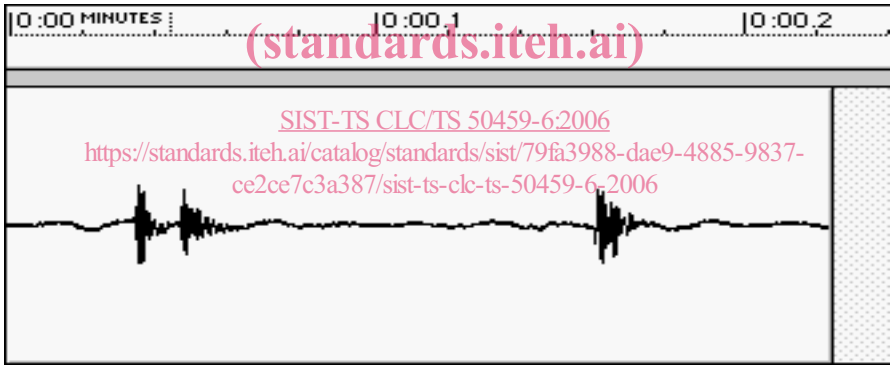

Figure 3 — S feedback 3

Reference information:

Click Figure 3 to hear the sound (file: S_feedback3_down_up.wav).