SLOVENSKI STANDARD
SIST-TP CLC/TR 50459-7:2007

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Železniške naprave - Komunikacijski, signalni in procesni sistemi - Evropski sistem upravljanja železniškega prometa - Vmesnik med strojevodjem in vlečnim vozilom - 7. del: Specifični prenosni moduli

Railway applications - Communication, signalling and processing systems - European Rail Traffic Management System - Driver-Machine interface -- Part 7: Specific Transmission Modules

Eisenbahnanwendungen - Systeme für die Kommunikation, Signalisierung und Datenverarbeitung - Europäisches Zugsteuerungssystem für den Schienenverkehr - Mensch-Maschine Schnittstelle -- Teil 7: Spezifische Übertragungseinheiten ERTMS/ETCS/GSM-R Systeme

Applications ferroviaires - Systemes de signalisation, de télécommunications et de traitement - Systeme européen de gestion du traffic ferroviaire - Interface de conduite -- Partie 7: Modules spécifiques de transmission

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Railway applications - Communication, signalling and processing systems - European Rail Traffic Management System - Driver-Machine interface - Part 7: Specific Transmission Modules

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This Technical Report was approved by CENELEC on 2006-06-24.

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CENELEC

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

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Foreword

This Technical Report 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 circulated for vote in accordance with the Internal Regulations, Part 2, Subclause 11.4.3.3 and was approved by CENELEC as CLC/TR 50459-7 on 2006-06-24.

This Technical Report 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 Report presents how to display information of national cab signalling systems associated with the ERTMS Driver Machine Interface defined in the series of Technical Specifications CLC/TS 50459.

1 Scope

The scope of this Technical Report is to define the ERTMS DMI in STM mode for each system include in Annex B of STI CC.

This Technical Report defines the ergonomics for the Specific Transmission Module integrated in 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.

The ergonomics covers the

– general arrangements (dialogue structure, sequences, layout philosophy, colour philosophy),

– symbols,

– audible information, and

– data entry arrangements.

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

1. 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.

2. Defining Driver-Machine Interface ergonomics that is compatible with agreed interoperable ERTMS specifications.

3. To reduce the risk of incorrect operation by a driver working with different trains fitted with ERTMS/ETCS.

4. Facilitating train operation with a unified ergonomics, hence reducing the cost of driver training.

This Technical Report is applicable on all trains fitted with the ERTMS/ETCS.

2 Normative references

Void

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 abbreviated terms given in CLC/TS 50459-1 and the following apply.

ATB	Automatische Trein Beïnvloeding (the automatic train protection system in the Netherlands)
ATBEG	Automatische Trein Beïnvloeding Eerste Generatie (first generation)
ATBNG	Automatische Trein Beïnvloeding Nieuwe Generatie (new generation)
BD	Buiten Dienst (standby mode of ATB)
DE	Data Entry
KVB	Contrôle de Vitesse par Balises
LSSF	Lampe de Signalisation Signal Fermé (Visible part of RPS)
RAN	Rangeren (shunting under ATBNG)
RFF	Réseau Ferré de France
ROZ	Rijden Op Zicht (Drive On Sight under ATBNG)
RPS	Répétition Ponctuelle des signaux
STM	Specific Transmission Module
STS	Stoptonend Sein (Signal Passed at Danger under ATBNG)
TIU	Train Interface Unit
TVM	Transmission Voie – Machine

5 Requirements

5.1 ATB

This subclause is not yet finalised. Additional explanations to be completed.

5.1.1 Basic principles

The aim of the STM ATB is to establish the ATBEG and ATBNG functionality. In this specification only the part of the DMI is described that refers to the main functionality.

5.1.2 Definitions of the colours

See CLC/TS 50459-1.

5.1.3 ATBEG

5.1.3.1 Functions of the DMI ATBEG

The DMI ATBEG has four groups:

1) Controls for the functions:
   - “Attentie”
   - “Ontgrendelen”
   - “Buiten Dienst”
   - “Kwiteren”
2) Status information:
   - “Buiten Dienst”
   - Intervention
   - “Remcriterium”
3) Supervised speed information:
   - 40 km/h
   - 60 km/h
   - 80 km/h
   - 130 km/h
   - 140 km/h
   - 160 km/h
4) Audible information:
   - Chime
   - Gong
   - Snooze

5.1.3.2 Layout of the DMI ATBEG

The DMI ATBEG shall be integrated in the ERTMS display as described in CLC/TS 50459-2. Figure 1 shows the layout of the cab display.

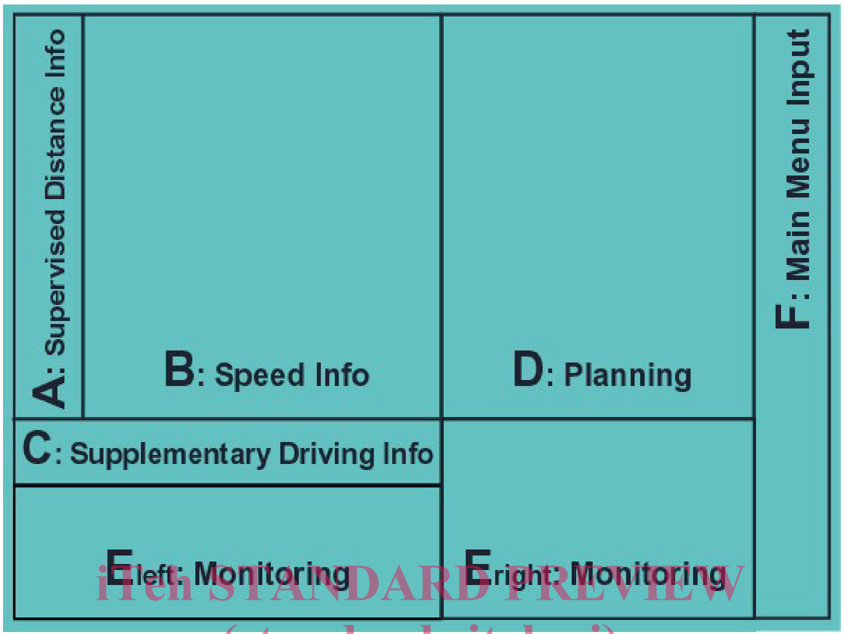

Figure 1 — Layout DMI ERTMS

The DMI STM ATBEG distinguishes several areas (Figure 1). The different areas on the display are used as follows:

Area A (as it is in CLC/TS 50459-2):

This area is not be used by the STM ATBEG.

Area B (as it is in CLC/TS 50459-2):

This area shows the speed indication as described in CLC/TS 50459-2. If STM ATB is selected an indication is also shown there.

Area C (as it is in CLC/TS 50459-2):

This area shows information about the trainborne supervised speed.

The information “Remcriterium” and “Remingreep” will also be shown in this area. If the STM ATB is out of service, this area will show instead of the supervised speed the information “ATB buiten bedrijf”. In this situation the STM ATB will not show any information in the areas A, D and E.

Area D (as it is in CLC/TS 50459-2):

This area is used to position the ‘pushbuttons’, e.g. the “attentieknop”, the “BD-knop”, the “Ontgrendelknop” and the “Kwiteerknop”. The “Kwiteerknop” may also be situated as an external button on the driver’s desk, see also 5.1.3.3.

Area E (as it is in CLC/TS 50459-2):

The STM ATB does not use this area.

Area F (as it is in CLC/TS 50459-2):

This area will be used in the same way as described for ERTMS.

5.1.3.3 Used information

5.1.3.3.1 General

The written information used in the symbols is in Dutch. It is not foreseen to present these texts in another language.

However, it should not be made impossible due to technical constraints, to add this feature in the future.

In this document the background colour of buttons and symbols is referred to as ‘dark blue’. This reference has the same meaning as the standard background colour of the ERTMS display (see CLC/TS 50459-1).

5.1.3.3.2 The pointer of the speed indication

The shape and dimensions of the speed indication are specified in CLC/TS 50459-2. The colour of the pointer and the scale of the speed indication are grey. The colour doesn’t change as long as the STM ATBEG is selected.

5.1.3.3.3 The information “STM ATB”

Position B7 (CLC/TS 50459-2) will show a symbol if the STM ATB is selected. This symbol remains visible until the STM is deselected. The symbol is a 90 degrees rotated square with the text “ATB”. The colour of the background is grey; the colour of the characters is black.

5.1.3.3.4 The information “ATB Buiten Bedrijf”

The symbol has a dark blue background surrounded with a red border. The symbol shows the text “ATB Buiten Bedrijf”. The colour of the text is white. The information will only be shown if the STM has the status “Buiten Bedrijf”.

Principle is that the STM knows the status “Buiten Bedrijf”. Under this circumstance the STM controls the DMI only as described above.

5.1.3.3.5 The information supervised speed

For this purpose area C is divided in separate symbols, each of them belonging to a specific maximum speed. The symbols are

– a yellow symbol without number,

– a yellow symbol with the number “6”,

– a yellow symbol with the number “8”,

– a yellow symbol with the number “13”,

– a yellow symbol with the number “14”,

– a green symbol with number showing the maximum train speed in ATBEG area.

The dimensions of the symbol and the used character shall follow the description of CLC/TS 50459-1. The colour of the text in the symbols is black.

The symbol yellow (no number) and green (with number) are always present. The other symbols are not shown on the DMI if the train is not able to run faster than the according speeds.

EXAMPLE

– Rolling stock suitable for a maximum speed of 140 km/h does not show the yellow symbol with the number “14”.

– Rolling stock suitable for a maximum speed of 100 km/h does not show the yellow symbol with the number “13” and “14”.

The presentation of the signalling is dynamic; if rolling stock is technically suitable for 140 km/h, but is limited via data entry to 100 km/h, only the appropriate signals will be shown.

If the entered maximum train speed is higher than the maximum speed of ATBEG (configuration parameter), the maximum speed of ATBEG shall be shown in the symbol “green with number”.

If one or more symbols of the maximum speed are missing the other symbols will be rearranged. The symbols shall be centred on the vertical axis of the speed indication. The dimensions of the symbols are fixed. If the maximum speed of a symbol is not supervised at a certain moment, the symbol is shown on a very dark blue background. The text (if available) is shown in dark grey colour.

5.1.3.3.6 Signalling of “Remcriterium”

The information “Remcriterium” is shown with the appropriate ERTMS symbol (see symbol 1.1 in CLC/TS 50459-5). The symbol is presented in position C8, as described in CLC/TS 50459-2.

5.1.3.3.7 Signalling of “Remingreep”

The information “Remingreep” is shown with the appropriate ERTMS symbol (see symbol 1.3 in CLC/TS 50459-5). The symbol is presented in position C9, as described in CLC/TS 50459-2.

5.1.3.3.8 “Attentieknop”

This button is only present if the STM is configured such, that the “Buiten Dienst” function can be active. In that case the button is always present if the STM ATBEG is in service (also if the speed supervision mode is active).

The symbol is an ‘up-button’, size-7 (see CLC/TS 50459-1) with the text “Attentie”.

The button has two positions (see CLC/TS 50459-1). The status ‘enabled’ exists if the STM is in the mode “Buiten Dienst”. The colour of the background is very dark blue, the colour of the text is white.

In all other circumstances the button shows the status ‘disabled’. The colour of the background is also very dark blue, the colour of the text is dark grey.

5.1.3.3.9 “BD knop” (“Buiten Dienst”)

This button is only present if the STM is configured such, that the “Buiten Dienst” function can be active. In that case the button is always present if the STM ATBEG is in service (also if the speed supervision mode is active).

The symbol is an ‘up-button’, size-7 (see CLC/TS 50459-1) with the text “Buiten Dienst”.

The button has three positions (see CLC/TS 50459-1). The status ‘enabled’ exists if the train

– is at standstill,

– has the brakes applied,

– has not received ATBEG track code.

The button has very dark blue background with the text in white. The button shows the status highlighted if the STM is in the mode “Buiten Dienst”. The colour of the background is very dark blue, surrounded with a light blue frame, the colour of the text is white.

In all other circumstances the button shows the status ‘disabled’. The colour of the background is also very dark blue, the colour of the text is dark grey.

5.1.3.3.10 The information “ATB Buiten Dienst”

The information “ATB Buiten Dienst” can be read on the button (see according description).

5.1.3.3.11 “Ontgrendelknop”

This button is always present when STM ATBEG is in service.

The symbol is an ‘up-button’, size-7 (see CLC/TS 50459-1) with the text “Ontgrendelen”. The button has two positions (see CLC/TS 50459-1). The button is ‘enabled’ if both

– the STM has initiated an intervention, and
– the train is at standstill.

The button has a dark blue background surrounded with a flashing red border The flashing frequency is described in CLC/TS 50459-1. The colour of the text is white.

In all other circumstances the button shows the status ‘disabled’. In those cases the background is also very dark blue, the colour of the text is dark grey.

The “Ontgrendelknop” is only shown and used if the STM is in ATBEG mode. If the STM is in ATBNG mode the ‘ontgrendel’-function will usually be connected to the brake controller (emergency brake position). Under certain conditions a separate button can be used. See also 2.3.3.

5.1.3.3.12 “Kwiteerknop”

This button is only present if the STM is configured such, that the “Kwiteer” function can be active. In that case the button is always present if the STM ATBEG is in service (also if the supervised speed is more than 40 km/h).

The symbol is an ‘up-button’, size-7 (see CLC/TS 50459-1) with the text “Kwiteren”.

The button has two positions (see CLC/TS 50459-1). The status ‘enabled’ exists if the supervised speed of the STM is equal to 40 km/h. The colour of the background is very dark blue, the colour of the text is white. When the STM generates the ‘kwiteer’ order, the button shall be surrounded with a yellow flashing border. The flashing frequency is described in CLC/TS 50459-1. The border will disappear when the driver has acknowledged the ‘kwiteer’ function or the STM has generated an intervention.

In all other circumstances the button shows the status ‘disabled’. The colour of the background is also very dark blue, the colour of the text is dark grey.

The ‘kwiteer’ function can also be realised with an external button. Both possibilities shall be supported by the STM.

If an external button is being used, the display button will remain visible and will retain its function as if the external button would not be there.

5.1.3.4 Audible information

The STM ATBEG shall present the driver in a few situations an audible signal.

These situations are:

– If the display information changes from BD (blue) to one of the following signals ‘yellow’, ‘yellow 6’, ‘yellow 8’, ‘yellow 13’ or ‘green xx[1)] 1 gong-beat.

– If there is a change between the signals ‘yellow’, ‘yellow 6’, ‘yellow 8’, ‘yellow 13’ or ‘green xx’: 1 gong-beat.

– If there is a change from the signals ‘yellow’, ‘yellow 6’, ‘yellow 8’, ‘yellow 13’ or ‘green xx’ to BD (blue): 3 gong-beats.

– If the “kwiteer” function is generated to the driver by the STM: an intermittent snooze.

– If the “remopdracht” function (an indication for the driver that he should brake now) is generated to the driver by the STM: a continuous chime until the driver has activated his brakes sufficiently.

– If the “losindicatie” function (an indication for the driver that he should release the brakes) is generated to the driver by the STM: 3 short chimes.

– If the “remingreep” function (the emergency intervention) is generated to the driver by the STM: a continuous chime until the brake system has set emergency brake position; but not longer than the moment the train has come to a standstill.

The used audible signals are identical in frequency and number to the ones used for previous ATB systems (e.g. ATB phase 4).

5.1.3.5 Examples

The examples below show various situations with the appropriate DMI presentation. Audible information is not described. The presented symbols in area E, in this case train running number and time indication are for illustration purpose only.

The examples are not extensive.

1) xx is the correct speed number