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Original

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Display System in Driver Cabs (DDS) - Train Radio Display (TRD)

Système d'affichage en cabine de conduite (DDS) - Ecran de radio sol-train (TRD)
Führerraum-Displaysystem (DDS) - Zugfunkanzeige (TRD)



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Summary

This leaflet:

- defines the TRD function of the Driver Display System (DDS) for driver cabs for locomotives, EMU/ DMU and driving coaches.
- fixes the rules associated with the functional requirements for driver cabs of EMU/DMU, locomotives and driving coaches.

1 - General

Functions and design allocated to harmonized Driver Machine Interfaces comprise all operationally relevant interfaces of the rolling stock concerned.

This document outlines the functional requirements and related operating procedures for the information displayed by a Train Radio Display (TRD) implemented in the driver's cabs of EMU, DMU, (see [List of abbreviations - page 43](#)) diesel and electric locomotives and driving coaches.

Each driver's cab shall provide a TRD application available on any display in the cab. The preferred position of this application in normal mode is left hand next to the ETD (see also *UIC Leaflet 612-0, Appendix A* - see Bibliography - [page 44](#)). The TRD shall supply information about the voice train radio system and the voice internal communication. This information basically consists of the management of the input and output call.

Objectives of this leaflet	Use	Verification
Define the target condition in order to avoid project specific engineering of common rolling stock functions.	Minimise the scope of interpretation for solutions that meet the requirements, identify deviations/non-compliance of functional requirements.	Comparison of target/ actual "specification ↔ manufacturer's solution".
Define functional requirements in a precise manner, so that functional changes or restrictions due to technical changes/innovations are avoided or minimised. Functional changes are acceptable for the case of proven cost-effective LCC advantages (e.g. reduction of faults and training expenditure) or mandatory regulation (i.e. TSI including specific cases). Comprehensive physical interface-specifications for interchangeability, independent of the supplier, are the target for future standards.	An unambiguous definition of consistent functional interfaces (standardisation) enabling innovative design at module level: old components can be replaced with new ones easily.	- Costs for: • spare parts and • maintenance and • repair. - Compliance with regulations and directives.
Retain known operational procedures for the driver, while trying to simplify them further.	Reduce training expenditure.	Training costs.
Avoid operating errors through largely self-explanatory and fault-tolerant functions and a high degree of automation and diagnostics.	Increase reliability.	- MTBF (see List of abbreviations - page 43) - Experience and User Feed-back.

2 - Scope of application

The provisions in this leaflet are applicable to driver cabs of EMU/DMU, locomotives and driving coaches.

This leaflet does not replace European legislation (*EIRENE*, *TSI*, including specific/national cases).

This document is Part 4 of *UIC Leaflets 612-0x series* (see [Bibliography - page 44](#)).

It describes the TRD function in driver cabs.

Requirements labelled "O" (obligatory) indicate the GSM-R functions that have been agreed to be normative in the European Railway system and therefore are a necessary precondition for free access to interoperable railway lines.

Requirements labelled "R" (recommended) show GSM-R (see [List of abbreviations - page 43](#)) options that shall not be imposed as a precondition for network access, but are used or foreseen by some Railway Undertakings.

The display system ends at the physical interface between the display system and the TCMS of the vehicle (see [List of abbreviations - page 43](#)).

The implementation of the TRD function requests the additional application of *UIC Leaflet 612-01* (see [Bibliography - page 44](#)).



Fig. 1 - Hierarchy of UIC 612 leaflets

3 - Definitions

See *UIC Leaflet 612-0* - see Bibliography - [page 44](#)).

General operation: See TSI RST, ch. 2.2

4 - Description of the Displays and the Display Elements in TRD

4.1 - Field subdivision and dimensions of the TRD image fields

4.1.1 - General

Cab display requirements independent from the application "Train Radio Display" (TRD) are prescribed by *UIC Leaflet 612-01*.

According to *UIC Leaflet 612-1* (see [Bibliography - page 44](#)) there is complete control of the TRD only in an activated cab in "in service" or "driving" configuration. Unlike the other cab display applications (CCD, TDD, ETD - see List of abbreviations - [page 43](#)), for the TRD the following functions shall be provided also in non-activated cabs for all cab configurations except "shut down" and "self protection":

Outgoing:

- Train-internal functions:
 - Intercom (see table [1 - page 8](#), F3)
 - Public address (see table [1](#), F4)
 - Chief conductor call (see table [1](#), F5)
- Operator option, if the TRD is used like a "call station" according to *UIC Leaflet 568* (see [Bibliography - page 44](#)): Train-external GSM-R function of "primary controller" (see table [2 - page 13](#), C1)

Incoming:

- Train-internal functions: Intercom (see table [1](#), F3)

Starting up the TRD application may follow the procedure specified in *UIC Leaflet 612-05* (ETD) (see [Bibliography - page 44](#)) up to data download from IM that is not requested for TRD purpose.

The TRD basic image shall be displayed when the TRD is ready to manage calls (see *UIC Leaflet 612-1*).

The precise information of each GSM-R mode and status on the TRD is defined by those heritage GSM-R train radio equipment that is in full conformity with the latest version of the EIRENE SRS.

All available information of the GSM-R network shall be displayed according to the symbol shape provided by TS 50459 with the symbol size specified in *UIC Leaflet 612-01, ch. 8.2.1.6* (62 x 62 cells) (see [Bibliography - page 44](#)), if no deviating requirements are set by this document.

Train radio emergency call: See *UIC Leaflet 612-0, pos. 012*.

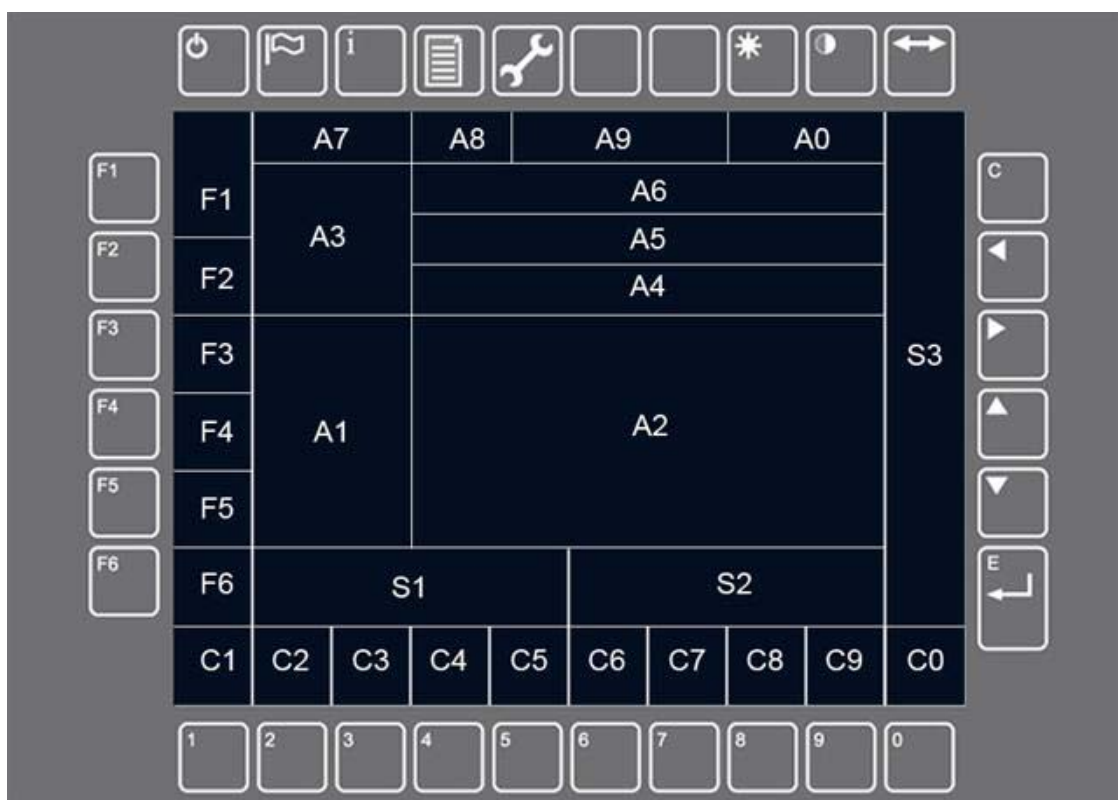


Fig. 2 - TRD image is divided into several fields

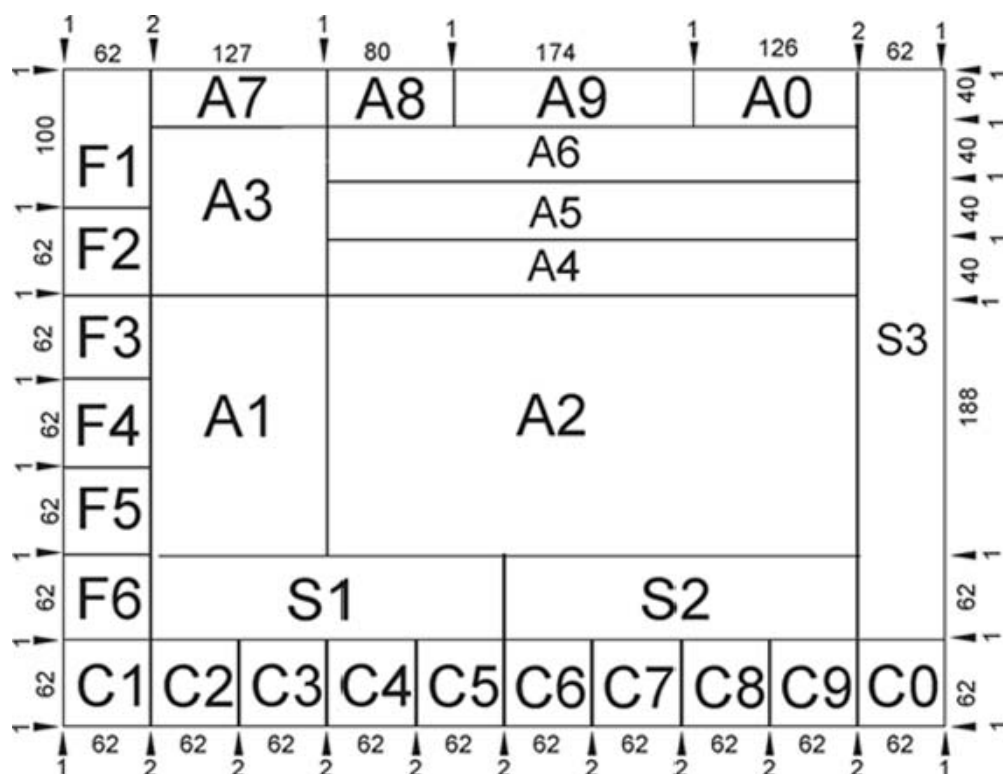


Fig. 3 - Dimensions of the TRD fields (all dimensions are given in cells)

Unlike other cab display applications (e. g. TDD), the fields A1- F6 of the TRD shall support the same function in all sub-menu levels. Only the fields S2, S3 and C1 - C0 shall show variable information depending on the menu level selected by operating the soft keys K3.1 (allocated to label C1) to K3.10 (allocated to label C0).

The TRD's circumferential keys K1.x to K4.x are defined by *UIC Leaflet 612-01*:

- Hard keys K1.x and K2.x: see *UIC Leaflet 612-01*,
- Soft keys K3.1 - K3.10 (C1 - C0) and K4.1 - K4.6 (F1 - F6):
 - according to *UIC Leaflet 612-01* the soft keys K3.1 - K3.10 are generally assigned to the application shown by the display. The function keys K4.1 - K4.6 may also be used like soft keys (see *UIC Leaflet 612-01*).

For the TRD:

- the function keys K4.1 - K4.6 are used as hard keys: see F1 to F6 as defined by table 1,
- the soft keys K3.1 - K3.10 are variable: see C1 - C0 as defined by table 2 - page 13.

Table 1 : Fields Ax and Sx and function keys F1 to F6

Fields Ax and Sx	
The fields Ax and Sx shall be used in all TRD images for the following information:	
A1	GSM-R symbol
A2	Announcement and communication field: - GSM-R information, - flash-SMS (incoming text, at least 160 digits without scrolling), - announcement of other than flash-SMS (symbol: envelope), - other text and symbols.
Ranking of information shall always give a GSM-R call information first priority!	
A3	Reserved for future use
A4	Text heading
A5	- for train radio mode: current call number - for shunting mode: common shunting group number
A6	Title of the TRD image
A7	- for train radio mode: train number - for shunting mode: shunting field number

Table 1 : Fields Ax and Sx and function keys F1 to F6

A8	Function code The function code defines the work position in the train (Leading Driver or other drivers - FC0x according to the definition chosen individually by each IM and provided to the RU via the route book).
A9	Current GSM-R operator and in addition optionally for - SNCF: virtual channel number (see UIC ERTMS/GSM-R Operators Group, document no. O-2680), - ADIF: Regulation Band Number (see UIC ERTMS/GSM-R Operators Group).
A0	Current time
S1	GSM-R status information
S2	Status field (for acoustic level 5 volume steps shall permanently be provided acc. to GSM-R EIRENE SRS.
S3	Soft key display field (blue triangle, if navigation key is active).

Function keys F1 to F6 (hard keys K4.1 to K4.6 acc. to *UIC Leaflet 612-01*)

Volume setting function



F1

- Increase the loudspeaker (pos. 081, see *UIC Leaflet 612-0*) volume, if handset is not lifted.
- increase handset (pos. 101, see *UIC Leaflet 612-0*) volume, if handset is lifted.

Note:

- The device for which the setting is done (handset or loudspeaker) shall be shown as a symbol left of the volume graphical symbol (triangle) in field S2 while setting.
- The setting shall not become valid for the inactive device.
- Any setting shall be stored until the next intentional setting unless entering "shut down" configuration acc. to *UIC Leaflet 612-1*. Then a default setting shall become valid for entering into "switched on" configuration.
- The acoustic level is shown in field S2. It shall not be necessary to push ENTER (K2.6) to store the new setting.



F2

- decrease the loudspeaker volume, if handset is not lifted
- decrease handset volume, if handset is lifted.

Note: see F1

Non-GSM-R related train communication functions, based on train wide communication link (for rolling stock intended for general operation this link is the *UIC Leaflets 558/568* train communication line)



F3

Intercom between driver's cabs and/or communication operating panels in coaches
This function shall initiate an intercom call between participants.



F4

Public address call (public announcement).
This function shall initiate a public address call by all loudspeakers in the train.



F5

Chief conductor call
This function shall initiate calling the chief conductor.

- If F5 is pressed once, a call shall be initiated to the chief conductor's mobile, which is registered under the same train number (FC10). If this mobile cannot be reached, a "gong" shall be triggered via the train's public address system (function retained as previously).
- If F5 is pressed twice, the "gong" shall be triggered directly via the train's public address system.

GSM-R function



F6

Secondary controller
This function shall initiate calling the secondary controller.

4.1.2 - Basic image

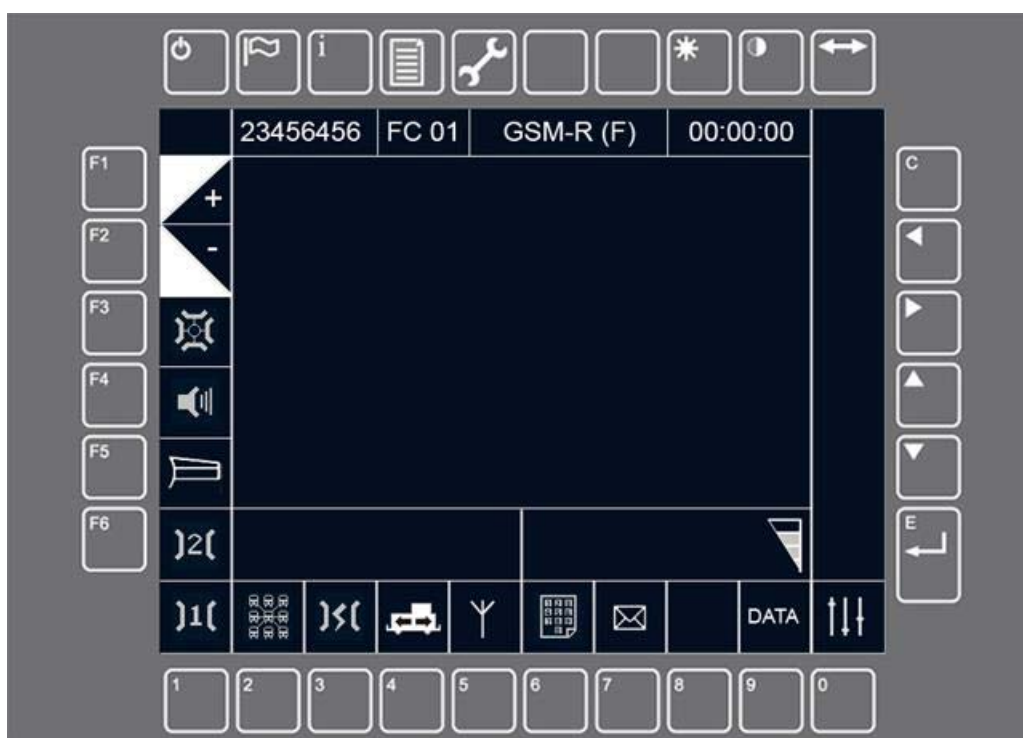


Fig. 4 - Cab activated in "in service" or "driving" configuration (see UIC Leaflet 612-1):
Basic image for GSM-R train radio functions

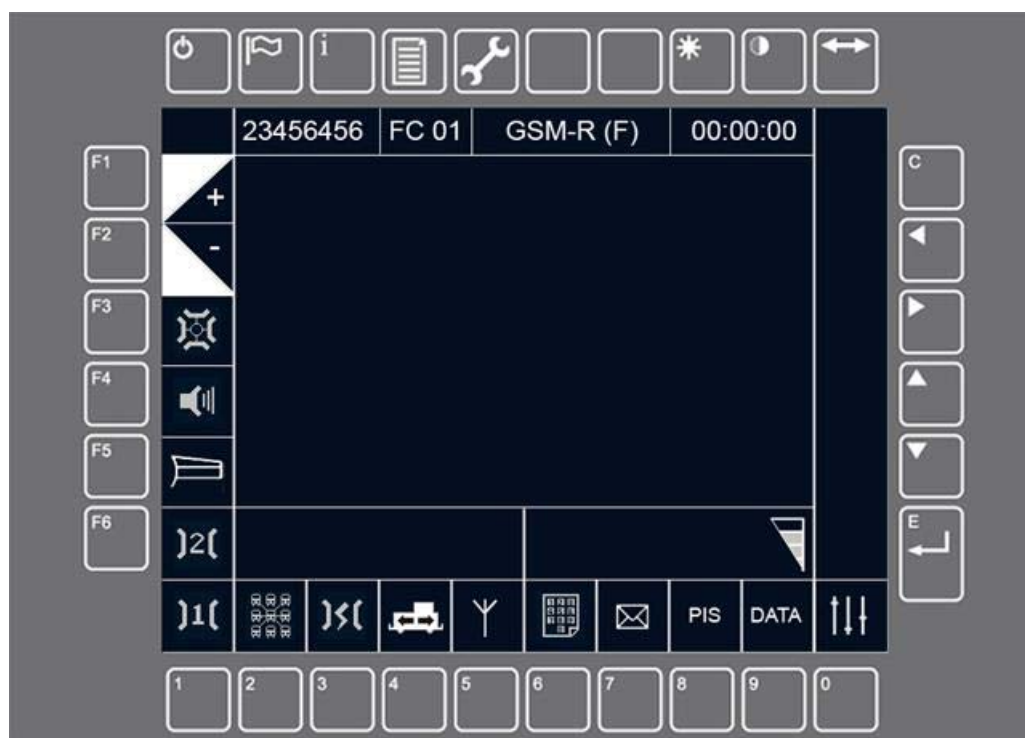


Fig. 5 - Basic image for GSM-R train radio functions as in Fig. 4, with the additional option of the Driver machine interface for interactions and information related to the Passenger Information System (PIS)

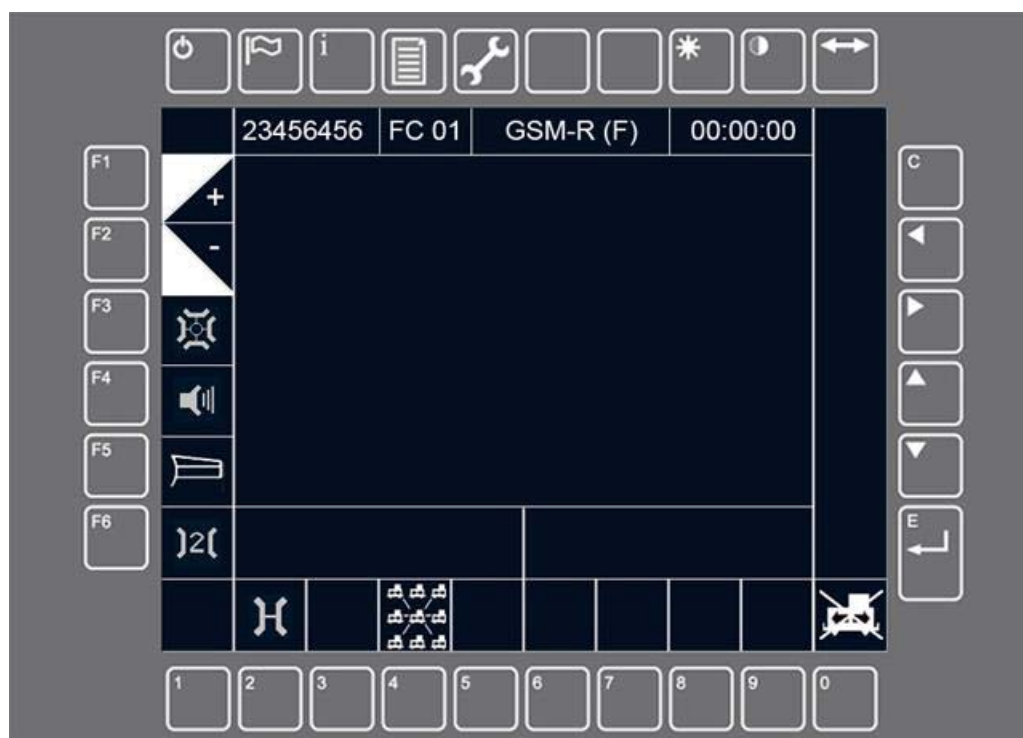


Fig. 6 - Basic image for GSM-R train radio functions: Shunting mode