SLOVENSKI STANDARD
SIST-TP CLC/TR 50623:2015

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Železniške naprave - Specifikacija funkcijskega vmesnika - Vratni sistem

Railway applications - Functional Interface Specification. - Door System

Ta slovenski standard je istoveten z: **CLC/TR 50623:2014**

ICS:

35.240.60	Uporabniške rešitve IT v transportu in trgovini	IT applications in transport and trade
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

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TECHNICAL REPORT

RAPPORT TECHNIQUE

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English Version

Railway applications - Functional Interface Specification - Door System

Applications ferroviaires - Spécification d'interface fonctionnelle - Système de porte

To be completed

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

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Foreword

This document (CLC/TR 50623:2014) has been prepared by WG15 of CLC/TC 9X "Electrical and electronic applications for railways".

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1 Scope

This Technical Report is covering the whole external door system which includes also movable steps and ramps.

It describes the functional interfaces of door system connected at vehicle level to the TCMS. It includes the direct I/O interface to train-lines.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 61131-3:2013, *Programmable controllers - Part 3: Programming languages (IEC 61131-3:2013)*

UIC 556, *Information transmission in the train (train-bus)*

UIC 558, *Remote control and data cable - Standard technical features for the equipping of RIC coaches*

3 Terms, definitions and abbreviations

For the purposes of this document, the following terms, definitions and abbreviations apply.

3.1 Terms and definitions

3.1.1
configuration
action that affects the system function

3.1.2
conventional train-lines
train lines that are described in the UIC leaflet 558

3.1.3
parameterisation
action that affects the system behaviour

3.1.4
released door
door enabled to act on passenger commands. A door is released by the given release command from driver or train crew and the proper speed condition is achieved (VeryLowSpeed)

3.2 Abbreviations

All the abbreviations used in this document are listed in Table 1, in alphabetic order referenced to their term.

Table 1 - Abbreviation table

Abbreviation	Term
FBS	Functional Breakdown Structure
FIS	Functional Interface Specification
I/O	Input/Output
PBS	Product Breakdown Structure
RAMS	Reliability, Availability, Maintainability, Safety
TCMS	Train Control & Monitoring System
UML	Unified Modelling Language
UTC	Universal Time Coordinated (time scale)

4 Doors reference architecture

The door reference architecture is shown in Figure 1.

The door system has a network interface with the TCMS and is as well connected to the conventional train-lines to transmit safety critical signals. This document describes the interface between TCMS and one single door.

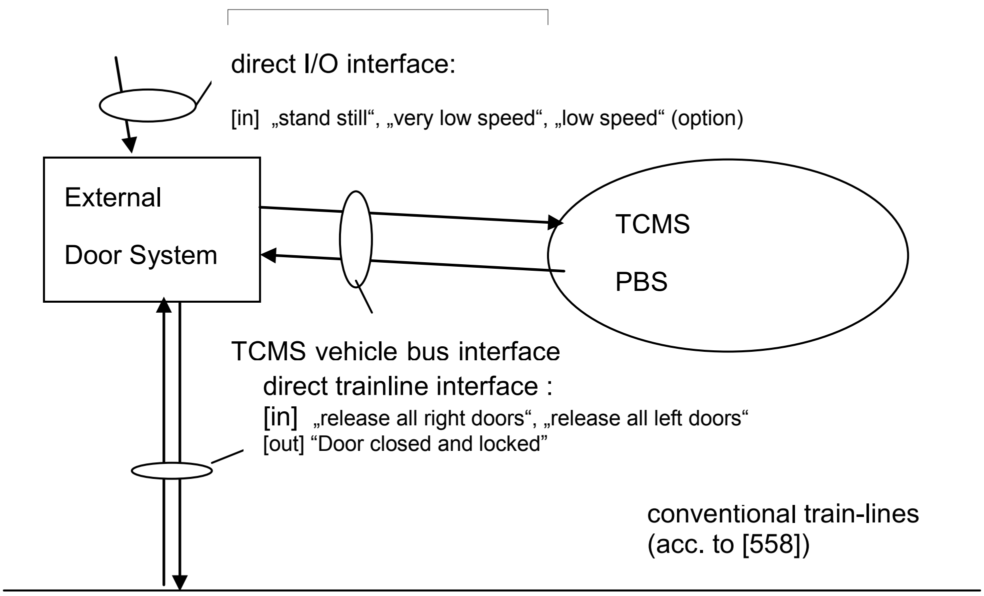

Figure 1 - Door reference architecture

5 Functional description

5.1 General

In this subclause are described the door functions external to the TCMS, which exchange information with the TCMS over the interface.

The here described interface is a basic standard interface with possibilities of extension (parameters and services can be added).

If not especially mentioned for each parameter a Set and a Get service is provided.

The function types which are considered are the following:

- Functions for parameterisation;
- Functions for control;
- Functions for monitoring;
- Functions for diagnostics;
- Functions for service.

5.2 Specific requirements on functional interfaces

If deemed useful, the static description of data are completed by:

- Dynamic description, with sequence diagrams, possibly using several interfaces identified in the reference architecture, for normal and degraded modes. These diagrams may contains timing requirements (such as time between the command set to TCMS and notification to remote actuators);
- RAMS requirements to the communication and processing in the TCMS;
- Any other relevant item;
- The physical layer shall be defined later.

5.3 Door

5.3.1 General

Figure 2 shows the UML model of the door control unit and the interface to the TCMS.

Figure 3 shows the UML diagram of the interfaces of the overall door control unit.

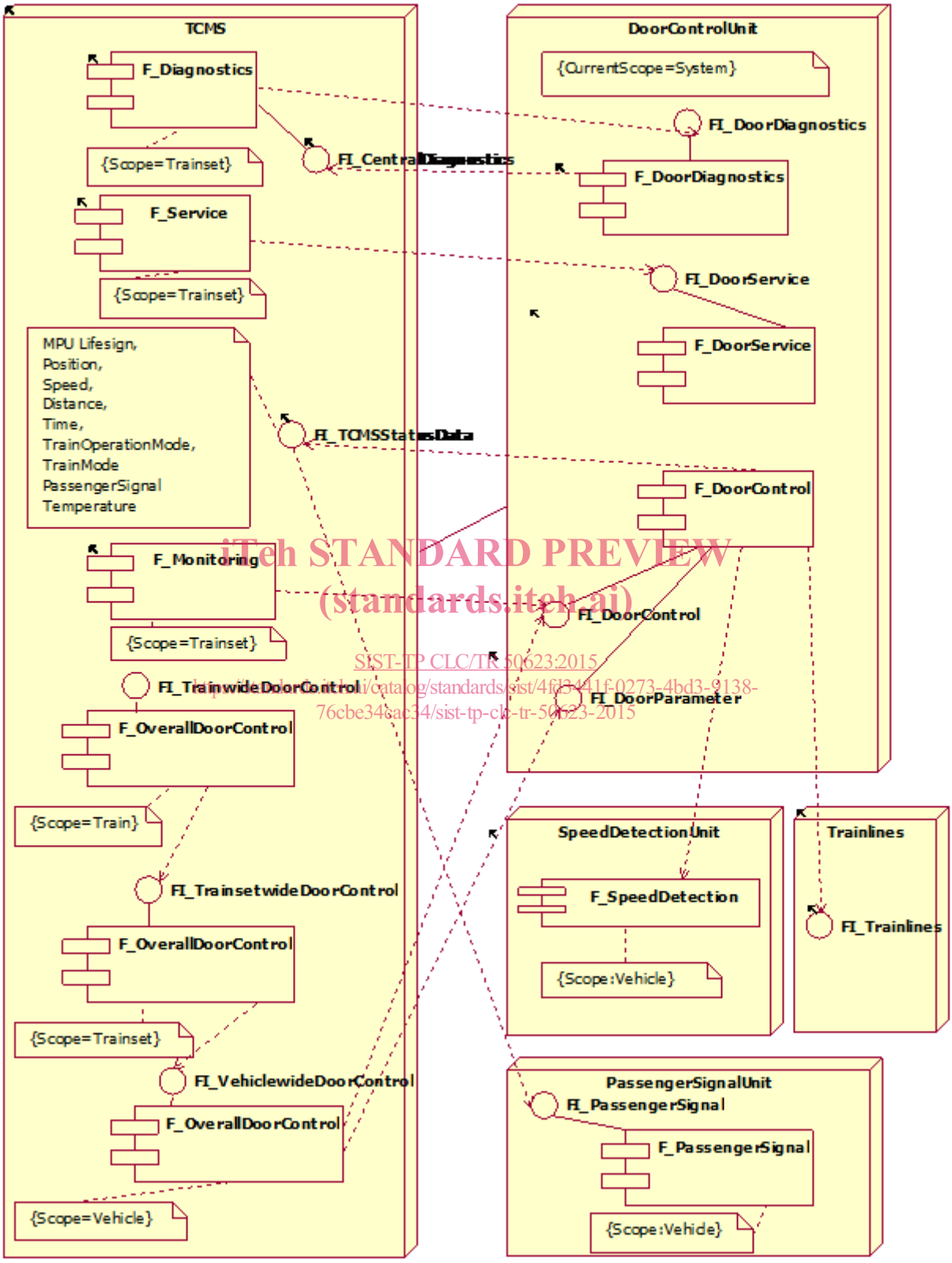

Figure 2 - Door control unit reference model

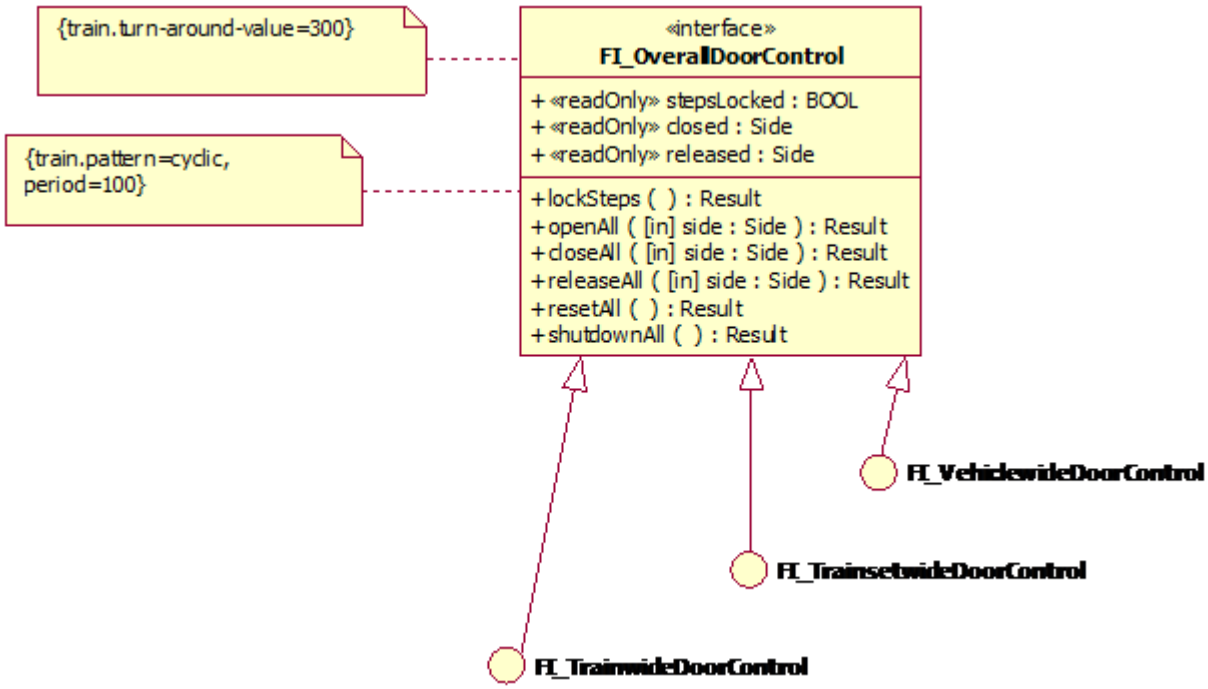

Figure 3 - overall door control unit interfaces

5.3.2 Types

5.3.2.1 General

Figure 4 shows the UML diagram of the door system data types.

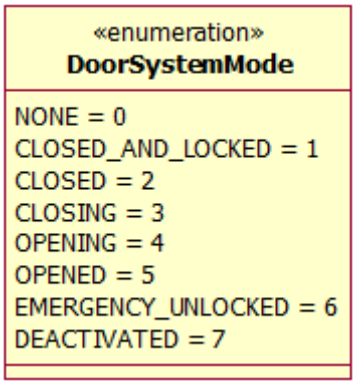

Figure 4 - door system data types

5.3.2.2 <Enumeration> DoorSystemMode

Table 2 lists the door system modes reporting the assigned value and the description.

Table 2 - Door system modes

Literal	Value	Description
NONE	0	Initial state
CLOSED_AND_LOCKED	1	door closed and mechanically locked
CLOSED	2	door completely closed, ramps and steps moved in
CLOSING	3	door in closing procedure and/or steps moving in
OPENING	4	door in opening procedure and/or steps moving out
OPENED	5	door completely opened and steps moved out
EMERGENCY_UNLOCKED	6	door unlocked to be opened manually
DEACTIVATED	7	door closed and locked by square key

5.3.3 Control and Parametrisation

5.3.3.1 General

Figure 5 shows the control and parametrisation interfaces of the door system.

The control is supported by services and parameters to influence the behaviour of the system in a wanted way. The door control and parametrisation functionality uses the TCMS interface to get the relevant train information (e.g. train mode, time, position).

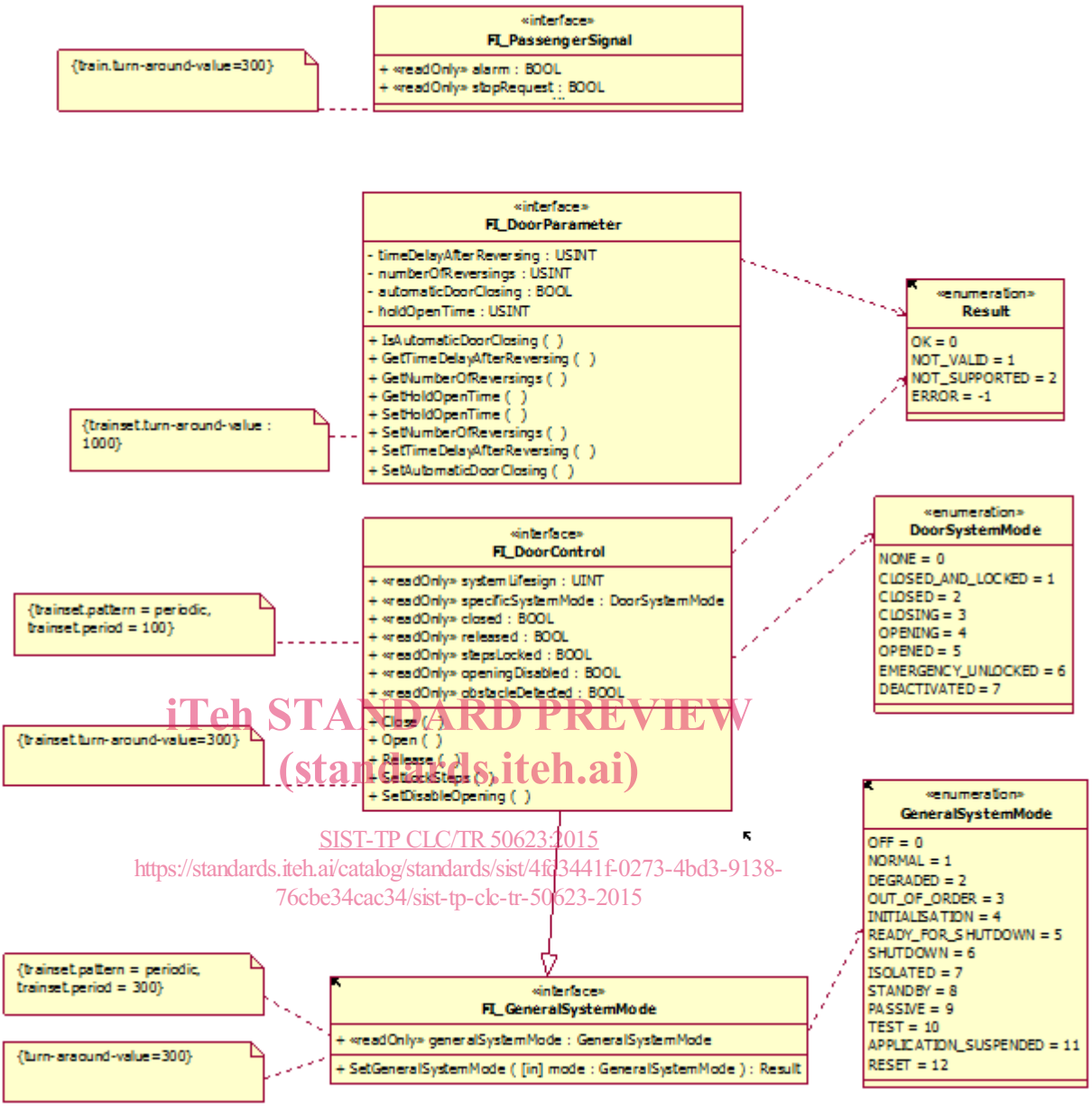

Figure 5 - Door control and parametrisation interfaces