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TECHNICAL SPECIFICATION

colour inside

Electronic railway equipment – Train communication network (TCN) – Part 2-4: TCN application profile

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRONIC RAILWAY EQUIPMENT – TRAIN COMMUNICATION NETWORK (TCN) –

Part 2-4: TCN application profile

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 61375-2-4, which is a technical specification, has been prepared by IEC technical committee 9: Electrical equipment and systems for railways, in collaboration with UIC.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
9/2093/DTS	9/2150A/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61375 series, published under the general title *Electronic railway equipment – Train communication network (TCN)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC TS 61375-2-4 defines the application profiles of the Train Communication Network in order to achieve communication between software applications throughout consist networks defined in IEC 61375-1 and the train backbone defined in IEC 61375-2-5.

This part of IEC 61375 defines the requirements for the applications communicating via the data transmission equipment of the consists throughout the consist networks and the train backbones.

The purpose of this part of IEC 61375 is to:

- fully document the communication requirements for all train applications, align them and set them out in standard form,
- provide guidelines for the technical solution of communication between software applications residing on the same or on different consists, which are part of a train, and which are connected to the consist networks and the train backbones in scope,
- define train applications for certain functionalities, which are in scope of this part of IEC 61375.

ELECTRONIC RAILWAY EQUIPMENT – TRAIN COMMUNICATION NETWORK (TCN) –

Part 2-4: TCN application profile

1 Scope

This part of IEC 61375 applies to the applications in trains, i.e. it covers the application profile for functions belonging to the Train Control and Monitoring System (TCMS). The application profile is based on the TCN communication system for the data communication between consists of the said trains. This document provides for a data interface with parameters and addressing of TCMS functions based on the communication profile laid out in IEC 61375-2-3.

This document is applicable in rolling stock requiring interoperable coupling and uncoupling. This part of IEC 61375 may be additionally applicable to closed trains and multiple unit trains when so agreed between purchaser and supplier.

The applicability of this part of IEC 61375 to the train communication network technologies as defined allows for interoperability of individual consists within trains.

The data communication systems inside consists are not covered by this document and are given only as example solutions to cope with the said TCN. In any case, proof of compatibility between a proposed train backbone and a proposed consist network will have to be brought by the supplier.

Special backup functions, which are used in cases when the train backbone is in a degraded condition are not in the scope of this document.

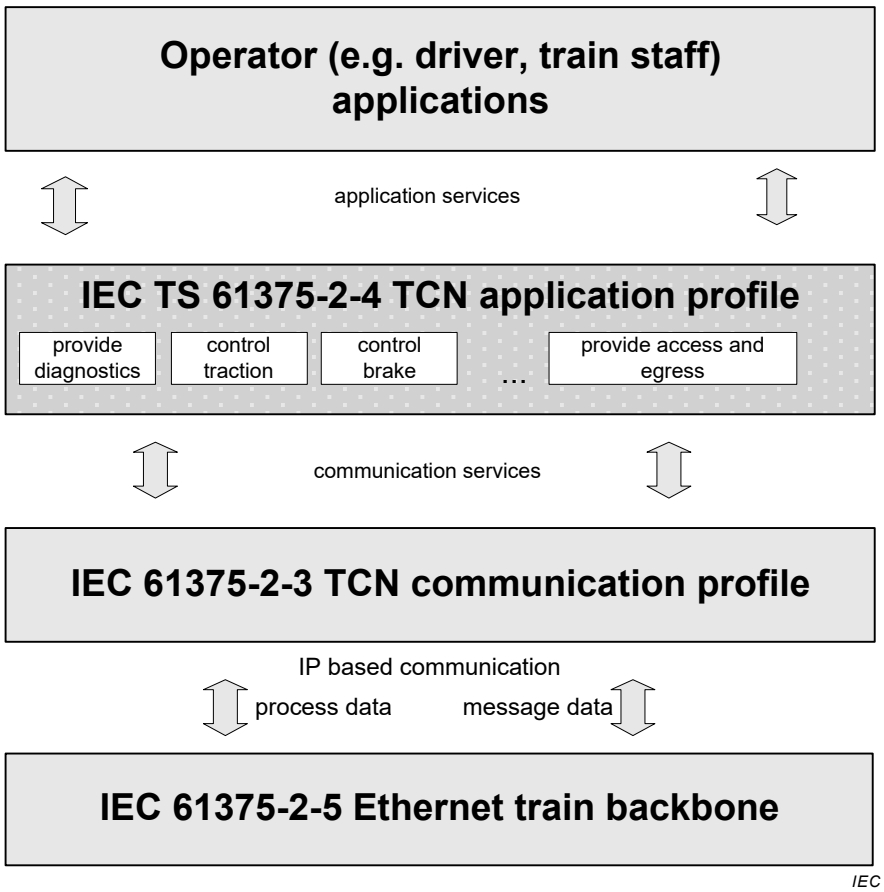

Figure 1 – IEC TS 61375-2-4 as a link between the functions and the applications

As illustrated in Figure 1 the purpose of this part of IEC 61375 is to create a general model that describes in a functional way the remote control of TCMS functions like “provide access and egress”. This document makes direct reference to IEC 61375-2-3, which covers data transmission on the Ethernet train backbone (ETB) and specifies the functions between the consists concerned (e.g. locomotives, multiple units and driving trailers) including the rules to set up the necessary data telegrams for transmission and process.

This document specifies the application profiles covering the train functions to:

a) provide access and egress;

b) control traction;

c) control brake;

d) provide diagnostics.

NOTE Functions b) to d) will be covered in a future revision of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 61375-1, *Electronic railway equipment – Train communication network (TCN) – Part 1: General architecture*

IEC 61375-2-1, *Electronic railway equipment – Train communication network (TCN) – Part 2-1: Wire Train Bus (WTB)*

IEC 61375-2-3, *Electronic railway equipment – Train communication network (TCN) – Part 2-3: TCN communication profile*