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

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FOREWORD

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International Standard IEC 61375-2-3 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

The text of this standard is based on the following documents:

FDIS	Report on voting
9/2029/FDIS	9/2048/RVD

Full information on the voting for the approval of this standard 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

The contents of the corrigenda of December 2015 and October 2016 have been included in this copy.

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

The IEC 61375 standard series specifies a Train Communication Network for usage in railway vehicles (trains) mainly intended for the exchange of TCMS related information, but not restricted to it. The specification starts from the physical layer up to the application layer and it involves different communication technologies.

This part of IEC 61375 (IEC 61375-2-3) defines the communication profile of the Train Communication Network so as to achieve interoperability between Consists connected by Ethernet Train Backbones as defined in IEC 61375-2-5.

The reasons for prompting the preparation of this part of IEC 61375 are:

- definition of the requirements necessary for communication interoperability on Ethernet Train Backbone level
- full documentation of the requirements of all users, aligning them and setting them out in standard form
- providing guidelines for the technical solution adopted for the train backbone interoperable communication
- defining a conformance test guideline (Annex F) which gives guidance for checking the conformity of consists to the communication profile

Concrete train applications for certain functionalities are not dealt with in this part of IEC 61375. They are contained in IEC 61375-2-4.

ELECTRONIC RAILWAY EQUIPMENT – TRAIN COMMUNICATION NETWORK (TCN) –

Part 2-3: TCN communication profile

1 Scope

This part of IEC 61375 specifies rules for the data exchange between consists in trains. The aggregation of these rules defines the TCN communication profile.

The objective of the communication profile is to ensure interoperability between consists of the said trains with respect to the exchange of information. For this it defines all those items which are necessary for communication interoperability:

- an architecture with defined train directions related to different train views
- a common functional addressing concept
- common communication protocol for data exchange between functions
- a set of services for train communication control.

As a restriction, this communication profile is adhered to the Ethernet Train Backbone (ETB) technology as defined in IEC 61375-2-5. Towards the consist networks, a more abstract interface is defined which does not restrict the appliance of any consist network technology as for instance MVB (IEC 61375-3-1), CANOpen (IEC 61375-3-3) or ECN (IEC 61375-3-4).

It is not within the scope of the communication profile to define application data content and its meaning (e.g. syntax and semantics). This is within the responsibility of the application profiles. Namely two application profiles are explicitly supported as shown in Figure 1: the TCMS application profile as defined in IEC 61375-2-4, and the onboard multimedia and telematic services (OMTS) related profiles as defined in the IEC 62580 series.

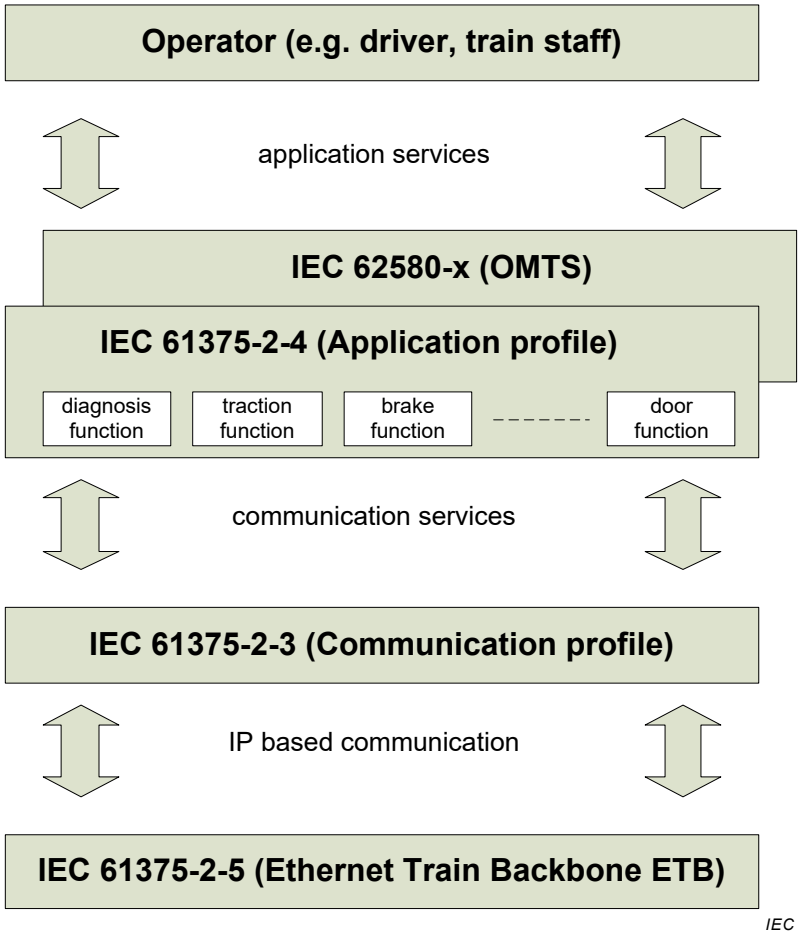

Figure 1 – IEC 61375-2-3 as connecting element between train backbone and application

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.

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 61375-2-4, *Electronic railway equipment – Train communication network (TCN) – Part 2-4: Application Profile* (to be published)

IEC 61375-2-5, *Electronic railway equipment – Train communication network (TCN) – Part 2-5: Ethernet train backbone*

IEC 62280*, Railway applications – Communication, signalling and processing systems – Safety related communication in transmission systems*

ISO/IEC 9646-6:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 6: Protocol profile test specification*

ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements*

ISO/IEC 17011:2004, *Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies*

ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*