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STN	**Elektronické železničné zariadenia. Vlaková komunikačná sieť (TCN). Časť 2-5: Hlavná vlaková sieť Ethernet.**	**STN EN 61375-2-5** 34 2675

Electronic railway equipment - Train communication network (TCN) - Part 2-5: Ethernet train backbone

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/15

Obsahuje: EN 61375-2-5:2015, IEC 61375-2-5:2014

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EUROPEAN STANDARD
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EUROPÄISCHE NORM

EN 61375-2-5

February 2015

ICS 45.060

English Version

Electronic railway equipment - Train communication network (TCN) - Part 2-5: Ethernet train backbone (IEC 61375-2-5:2014)

Matériel électronique ferroviaire - Réseau embarqué de train (TCN) - Partie 2-5: Réseau central de train Ethernet (IEC 61375-2-5:2014)

Elektronische Betriebsmittel für Bahnen - Zug-Kommunikations-Netzwerk - Teil 2-5: ETB - Ethernet Train Backbone (IEC 61375-2-5:2014)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 61375-2-5:2015 E

Foreword

The text of document 9/1933/FDIS, future edition 1 of IEC 61375-2-5, prepared by IEC/TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61375-2-5:2015.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-08-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-09-29

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Endorsement notice

The text of the International Standard IEC 61375-2-5:2014 was approved by CENELEC as a European Standard without any modification.

IEC 61375-2-1:2012	NOTE Harmonized as EN 61375-2-1:2012.
IEC 61784-2	NOTE Harmonized as EN 61784-2.
IEC 61918	NOTE Harmonized as EN 61918.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61076-2-101	2012	Connectors for electronic equipment - Product requirements -- Part 2-101: Circular connectors - Detail specification for M12 connectors with screw-locking	EN 61076-2-101	2012
IEC 61156	series	Multicore and symmetrical pair/quad cables for digital communications	-	series
IEC 61156-1	2007	Multicore and symmetrical pair/quad cables for digital communications - Part 1: Generic specification	-	-
IEC 61156-5	-	Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz - Horizontal floor wiring - Sectional specification	-	-
IEC 61375-1	2012	Electronic railway equipment - Train communication network (TCN) -- Part 1: General architecture	EN 61375-1	2012
IEC 61375-2-3	-	Electronic railway equipment - Train Communication Network (TCN) - Part 2-3: TCN communication profile	FprEN 61375-2-3	-
IEC 61375-3-4	-	Electronic railway equipment - Train Bus - Part 3-4: ECN - Ethernet Consist Network	EN 61375-3-4	-
IEC 62236-3-2	-	Railway applications - Electromagnetic compatibility -- Part 3-2: Rolling stock - Apparatus	-	-
ISO/IEC 7498	series	Information processing systems - Open systems interconnection - Basic reference model	-	series
ISO/IEC 8824	series	Information technology - Abstract Syntax Notation One (ASN.1)	-	series
ISO/IEC 9646	series	Information technology - Open Systems Interconnection	EN ISO/IEC 9646	series
ISO/IEC 11801	2002	Information technology - Generic cabling for customer premises	-	-
IEEE 802.1AB	-	IEEE Standard for Local and Metropolitan Area Networks - Station and Media Access Control Connectivity Discovery	-	-
IEEE 802.1AX	2008	IEEE Standard for Local and metropolitan area networks - Link Aggregation	-	-

IEEE 802.1D	2012	IEEE Standard for local and metropolitan area networks - Media Access Control (MAC) Bridges	-	-
IEEE 802.1Q	-	IEEE Standard for Local and metropolitan area networks - Media Access Control (MAC) Bridges and Virtual Bridges	-	-
IEEE 802.2	-	IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 2: Logical Link Control	-	-
IEEE 802.3	2012	IEEE Standard for Ethernet	-	-

Annex ZZ
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Annex lll of the EC Directive 2008/57/EC (also named as New Approach Directive 2008/57/EC Rail Systems: Interoperability).

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZZ.1 relating to the 'rolling stock - locomotives and passenger rolling stock' subsystem of the rail system in the European Union, confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZZ.1 - Correspondence between this European Standard, the RST LOC&PAS TSI (published in the Official Journal L 356 on 12 December 2014, p. 228) and Directive 2008/57/EC

Clauses of this European Standard	Chapter / § / points / of RST LOC&PAS TSI	Essential Requirements (ER) of Directive 2008/57/EC	Comments
The whole standard is applicable	4.2.4.9 Brake state and fault indication 4.2.5.2 Audible communication system 4.2.5.3 Passenger alarm 4.2.5.4 Communication devices for passengers 4.2.5.5 Exterior doors 4.2.12.2 General documentation: - description of computerised onboard systems	2. Requirements specific to each sub-subsystem 2.4. Rolling Stock 2.4.1. Safety 2.4.2. Reliability and availability 2.4.3. Technical compatibility	The TSI does not impose any technical solution regarding physical interfaces between units. The standard offers a general multi-purpose solution for the inter-vehicle digital communication network and it is relevant to vehicle interoperability.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

IEC 61375-2-5

Edition 1.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Matériel électronique ferroviaire – Réseau embarqué de train (TCN) – Partie 2-5: Réseau central de train Ethernet

IEC 61375-2-5:2014-08(en-fr)

IEC 61375-2-5

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRONIC RAILWAY EQUIPMENT – TRAIN COMMUNICATION NETWORK (TCN) –

Part 2-5: Ethernet train backbone

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61375-2-5 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
9/1933/FDIS	9/1961/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 web site 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.

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 61375-2-5 defines the Ethernet Train Backbone so as to achieve interoperability between Consists of different types when coupled in the same train composition.

The standard follows the ISO-OSI model and specifies the whole protocols stack from the physical layer up to the application layer.

A Protocol Implementation Conformance Statement (PICS) pro-forma allows suppliers to state their conformity to this standard. The PICS pro-forma specification and the related conformity test are not in the scope of this standard.

ELECTRONIC RAILWAY EQUIPMENT – TRAIN COMMUNICATION NETWORK (TCN) –

Part 2-5: Ethernet train backbone

1 Scope

This part of IEC 61375 defines Ethernet Train Backbone (ETB) requirements to fulfil open train data communication system based on Ethernet technology.

Respect of this standard ensures interoperability between local Consist subnets whatever Consist network technology (see IEC 61375-1 for more details).

All Consist network definitions should take into account this standard to preserve interoperability.

This standard may be additionally applicable to closed trains and multiple-unit trains when so agreed between purchaser and supplier.

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 61076-2-101:2012, *Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking*

IEC 61156 (all parts), *Multicore and symmetrical pair/quad cables for digital communications*

IEC 61156-1:2007, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-5, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal floor wiring – Sectional specification*

IEC 61375-1:2012, *Electronic railway equipment – Train communication network (TCN) – Part 1: General architecture*

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

IEC 61375-3-4, *Electronic railway equipment – Train communication network (TCN) – Part 3-4: Ethernet Consist Network (ECN)*

IEC 62236-3-2, *Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus*

ISO/IEC 7498 (all parts), *Information technology – Open System Interconnection – Basic Reference Model*

ISO/IEC 8824 (all parts), *Information technology – Abstract Syntax Notation One (ASN.1)*

ISO/IEC 9646 (all parts), *Information technology – Open Systems Interconnection – Conformance testing methodology and framework*

ISO/IEC 11801:2002, *Information technology – Generic cabling for customer premises*

IEEE 802.1AB, *IEEE Standard for Local and metropolitan area networks – Station and Media Access Control Connectivity Discovery*

IEEE 802.1AX:2008, *IEEE Standard for Local and metropolitan area networks – Link Aggregation*

IEEE 802.1D:2012, *IEEE Standard for Local and metropolitan area networks – Media Access Control (MAC) Bridges*

IEEE 802.1Q, *IEEE Standard for Local and metropolitan area networks – Virtual Bridged Local Area Networks*

IEEE 802.2, *IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 2: Logical Link Control*

IEEE 802.3:2012, *IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*