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Elektronisk utrustning för järnvägar – Kommunikationsnätverk för tåg (TCN) – Del 2-5: Stamnät för Ethernet i tåg

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

Som svensk standard gäller europastandarden EN 61375-2-5:2015. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61375-2-5:2015.

Nationellt förord

Europastandarden EN 61375-2-5:2015

består av:

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

utarbetad inom International Electrotechnical Commission, IEC.

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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

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-29

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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRONIC RAILWAY EQUIPMENT –
TRAIN COMMUNICATION NETWORK (TCN) –****Part 2-5: Ethernet train backbone****FOREWORD**

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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.

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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*