SLOVENSKI STANDARD
SIST EN 61162-450:2011

01-oktober-2011

Pomorska navigacijska in radiokomunikacijska oprema in sistemi - Digitalni vmesniki - 450. del: Več govorcev in poslušalcev - Medsebojna povezava lažjih ladijskih sistemov

Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Light-weight ship systems interconnection

Ta slovenski standard je istoveten z: **EN 61162-450:2011**

ICS:

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

SIST EN 61162-450:2011 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61162-450

August 2011

ICS 47.020.70

English version

Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection

(IEC 61162-450:2011)

Matériels et systèmes de navigation et de radiocommunication maritimes - Interfaces numériques - Partie 450: Emetteurs multiples et récepteurs multiples - Interconnexion Ethernet (CEI 61162-450:2011)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Digitale Schnittstellen - Teil 450: Mehrere Datensenden und mehrere Datenempfänger - Leichte Schiffssystemzusammenschaltung (IEC 61162-450:2011)

This European Standard was approved by CENELEC on 2011-07-15. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

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Foreword

The text of document 80/615/FDIS, future edition 1 of IEC 61162-450, prepared by IEC TC 80, Maritime navigation and radiocommunication equipment and systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61162-450 on 2011-07-15.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-04-15
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-07-15

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61162-450:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60603-7	NOTE	Harmonized as EN 60603-7.
IEC 60603-7-3	NOTE	Harmonized as EN 60603-7-3.
IEC 60603-7-7	NOTE	Harmonized as EN 60603-7-7.
IEC 61076-2-101	NOTE	Harmonized as EN 61076-2-101.
IEC 61162-2	NOTE	Harmonized as EN 61162-2.
IEC 61162-3	NOTE	Harmonized as EN 61162-3.
IEC 61754-20	NOTE	Harmonized as EN 61754-20.
IEC 61996-1	NOTE	Harmonized as EN 61996-1.
IEC 62388	NOTE	Harmonized as EN 62388.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

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

Publication	Year	Title	EN/HD	Year
IEC 60825-2	-	Safety of laser products - Part 2: Safety of optical fibre communication systems (OFCS)	EN 60825-2	-
IEC 60945	-	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	-
IEC 61162-1	-	Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners	EN 61162-1	-
IEEE 802.3	-	IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications	-	-
ISOC RFC 768	-	User Datagram Protocol	-	-
ISOC RFC 791	-	Internet Protocol - DARPA Internet Program Protocol Specification	-	-
ISOC RFC 792	-	Internet Control Message Protocol	-	-
ISOC RFC 826	-	Ethernet Address Resolution Protocol	-	-
ISOC RFC 1918	-	Address Allocation for Private Internets	-	-
ISOC RFC 2474	-	Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers	-	-
ISOC RFC 5000	-	Internet Official Protocol Standards	-	-
ISOC RFC 5227	-	IPv4 Address Conflict Detection	-	-
ISOC RFC 5424	-	The Syslog Protocol	-	-
NMEA 0183	2008	Standard for interfacing marine electronic devices	-	-

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INTERNATIONAL STANDARD

Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 450: Multiple talkers and multiple listeners – Ethernet interconnection

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 450: Multiple talkers and multiple listeners – Ethernet interconnection

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61162-450 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

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

FDIS	Report on voting
80/615/FDIS	80/621/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.

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

- 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.

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 450: Multiple talkers and multiple listeners – Ethernet interconnection

1 Scope

This part of IEC 61162 specifies interface requirements and methods of test for high speed communication between shipboard navigation and radiocommunication equipment as well as between such systems and other ship systems that need to communicate with navigation and radio-communication equipment. This part of IEC 61162 is based on the application of an appropriate suite of existing international standards to provide a framework for implementing data transfer between devices on a shipboard Ethernet network.

This standard provides a higher speed and higher capacity alternative to the IEC 61162-1 and IEC 61162-2 standards while retaining these standards' basic data format. This standard provides a higher data capacity than IEC 61162-3.

This standard specifies an Ethernet based bus type network where any listener may receive messages from any sender with the following properties.

- This standard includes provisions for multicast distribution of information formatted according to IEC 61162-1, for example position fixes and other measurements, as well as provisions for transmission of general data blocks (binary image), for example between radar and VDR.
- This standard is limited to protocols for equipment (Network nodes) connected to a single Ethernet network consisting only of OSI level one or two devices and cables (Network infrastructure).
- This standard provides requirements only for equipment interfaces. By specifying protocols for transmission of IEC 61162-1 sentences and general binary image data these requirements will guarantee interoperability between equipment implementing this standard as well as a certain level of safe behaviour of the equipment itself.
- This standard permits equipment using other protocols than those specified in this standard to share a network infrastructure provided that it is supplied with interfaces which satisfy the requirements described for ONF (see 4.6).
- This standard does not contain any system requirements other than the ones that can be inferred from the sum of individual equipment requirements. Thus, to ascertain system properties that cannot be derived from equipment requirements alone, additional analysis or standards will be required. In particular, this applies to requirements to maintain system functionality in the face of a single point failure in equipment or networks. Informative Annex D contains guidance on how to address such issues.

2 Normative references

The following referenced documents are indispensable for the application 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 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCS)*

IEC 60945, *Maritime navigation and radiocommunication equipment and systems – General Requirements – Methods of testing and required test results*

IEC 61162-1, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IEEE 802.3, *IEEE Standards for Local Area Networks: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications*

ISOC RFC 768, *User Datagram Protocol, Standard STD0006*

ISOC RFC 791, *Internet Protocol (IP), Standard STD0005 (and updates)*

ISOC RFC 792, *Internet Control Message Protocol (ICMP), Standard STD0005 (and updates)*

ISOC RFC 826, *An ethernet Address Resolution Protocol*

ISOC RFC 1918, *Address Allocation for Private Internets, Best Current Practice BCP0005*

ISOC RFC 2474, *Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers*

ISOC RFC 5000, *Internet Official Protocol Standards, Standard 0001*

ISOC RFC 5227, *IPv4 Address Conflict Detection*

ISOC RFC 5424, *The Syslog Protocol*

NMEA 0183:2008, *Standard for interfacing marine electronic devices, Version 4.00*

NOTE The standards of the Internet Society (ISOC) are available on the IETF websites http://www.ietf.org. Later updates can be tracked at http://www.rfc-editor.org/rfcsearch.html

3 Terms and definitions

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

3.1
ASCII
printable 7 bit character encoded in one byte

3.2
binary image
data block without formatting known to this protocol, i.e., non IEC 61162-1 formatted data, that can be transmitted with the protocol defined in 7.3.

NOTE The term “binary image” is used to differentiate the general data transfer protocol (which may or may not be in ordinary text format) from the transmission of sentences that is always in 7 bit ASCII format.

3.3
byte
group of 8 bits treated as one unit; this corresponds to what is also sometimes called an octet

3.4
command-response pair
CRP
messages exchanged between parties that synchronize state changes on both sides through the exchange

NOTE 1 CRP are defined in Annex A.

NOTE 2 Both the command and the reply message may also be used as a sensor broadcast message in some cases. Thus, the implementation of the semantics of the message exchange is somewhat different between different users of the exchange.

3.5
datagram
one atomic UDP transmission unit on the Ethernet as defined in ISOC RFC 768 and as constrained elsewhere in this standard

3.6
Ethernet
a carrier sense, multiple access collision detect (CSMA/CD) local area network protocol standard as defined in IEEE 802.3 and later revisions and additions to IEEE 802

NOTE The types of Ethernet media that can be used for implementation of this standard are defined in Clause 5.

3.7
function block
specified functionality implemented by equipment

NOTE Equipment normally implements multiple function blocks. Requirements to equipment are the sum of requirements to the function blocks it implements. Function blocks are defined in Clause 4. Types of function blocks are System Function Block (SF), Other Network Function Block (ONF), Network Function Block (NF) and Serial to Network Gateway Function Block (SNGF).

3.8
internet assigned number authority
IANA
global coordination of the Domain Name Server (DNS) Root, IP addressing, and other Internet protocol resources, including UDP and TCP port numbers

NOTE The currently assigned numbers are listed in http://www.iana.org/assignments/port-numbers.

3.9
internet protocol
IP
used and defined in ISOC RFC 791 (and updates)

3.10
message
collection of one or more sentences that are grouped by mechanisms internal to the sentence, for instance by sequence numbers as in the TXT sentence, i.e. a stand alone sentence is a message

3.11
message type
classification of IEC 61162-1 sentence formatters into SMB, MSM and CRP types

NOTE 1 SMB, MSM and CRP types are defined in Annex A.

NOTE 2 This standard defines different requirements to the transmission of different message types.