ICS 47.020.70 SLOVENSKÁ TECHNICKÁ NORMA Január 2019

| STN | **Námorné navigačné a rádiokomunikačné zariadenia a systémy<br>Digitálne rozhrania<br>Časť 450: Mnohonásobné vysielače údajov a mnohonásobné prijímače údajov<br>Ethernetové prepojenie** | **STN<br>EN IEC 61162-450**<br><br>32 6790 |
|---|---|---|

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

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. 12/18

Obsahuje: EN IEC 61162-450:2018, IEC 61162-450:2018

Oznámením tejto normy sa od 08.06.2021 ruší
STN EN 61162-450 (32 6790) z decembra 2011

**127605**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN IEC 61162-450

August 2018

ICS 47.020.70

Supersedes EN 61162-450:2011

English Version

# Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection (IEC 61162-450:2018)

Matériels et systèmes de navigation et de radiocommunication maritimes - Interfaces numériques - Partie 450: Emetteurs multiples et récepteurs multiples - Interconnexion Ethernet (IEC 61162-450:2018)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Digitale Schnittstellen - Teil 450: Mehrere Datensender und mehrere Datenempfänger - Ethernet-Verbund (IEC 61162-450:2018)

This European Standard was approved by CENELEC on 2018-06-08. 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.

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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 CEN-CENELEC Management Centre 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.


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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. EN IEC 61162-450:2018 E

**EN IEC 61162-450:2018**

## European foreword

The text of document 80/880/FDIS, future edition 2 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 approved by CENELEC as EN IEC 61162-450:2018.

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) | 2019-03-08 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2021-06-08 |

This document supersedes EN 61162-450:2011.

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

## Endorsement notice

The text of the International Standard IEC 61162-450:2018 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 61162-450:2011 | NOTE | Harmonized as EN 61162-450:2011 (not modified). |
| IEC 61162-460 | NOTE | Harmonized as EN 61162-460. |
| IEC 61174 | NOTE | Harmonized as EN 61174. |
| IEC 61754-20 | NOTE | Harmonized as EN 61754-20. |
| IEC 61996-1 | NOTE | Harmonized as EN 61996-1. |
| IEC 62388:2007 | NOTE | Harmonized as EN 62388:2008 [1] (not modified). |

[1] Superseded by EN 62388:2013 (IEC 62388:2013).

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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 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 | 2016 | Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners | EN 61162-1 | 2016 |
| IEC 61162-3 | 2008 | Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 3: Serial data instrument network | EN 61162-3 | 2008 |
| IEEE Std 802.3 | 2015 | IEEE Standard for Ethernet | - | - |
| IETF RFC 768 | - | User Datagram Protocol | - | - |
| IETF RFC 791 | - | Internet Protocol (IP) - DARPA Internet Program Protocol Specification | - | - |
| IETF RFC 792 | - | Internet Control Message Protocol (ICMP) | - | - |
| IETF RFC 793 | 1981 | Transmission Control Protocol (TCP) | - | - |
| IETF RFC 826 | - | An Ethernet Address Resolution Protocol | - | - |
| IETF RFC 1112 | - | Host Extensions for IP multicasting | - | - |
| IETF RFC 1918 | - | Address Allocation for Private Internets | - | - |
| IETF RFC 2236 | - | Internet Group Management Protocol, Version 2 | - | - |
| IETF RFC 2474 | - | Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers | - | - |
| IETF RFC 3376 | - | Internet Group Management Protocol, Version 3 | - | - |

**EN IEC 61162-450:2018**

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IETF RFC 5000 | - | Internet Official Protocol Standards | - | - |
| IETF RFC 5227 | - | IPv4 Address Conflict Detection | - | - |
| IETF RFC 5424 | - | The Syslog Protocol | - | - |
| NMEA 0183 | 2008 | Standard for interfacing marine electronic devices, Version 4.00 | - | - |

IEC 61162-450

Edition 2.0 2018-05

# INTERNATIONAL STANDARD

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

IEC 61162-450:2018-05(en)

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The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

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**IEC Glossary - std.iec.ch/glossary**
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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# IEC 61162-450

Edition 2.0 2018-05

# INTERNATIONAL STANDARD

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

INTERNATIONAL
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COMMISSION

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# CONTENTS

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

This second edition of IEC 61162-450 cancels and replaces the first edition published in 2011 and Amendment 1:2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) network traffic filtering based on IGMP snooping added;
b) network traffic balancing added;
c) new encapsulation of IEC 61162-3 PGNs added;

d) new alternative for binary file transfer added: TCP/IP based on Annex H of IEC 62388:2007 on radars;

e) general authentication tag "a:" added to support managing of cyber security risk.

The text of this International Standard is based on the following documents:

| FDIS | Report on voting |
|---|---|
| 80/880/FDIS | 80/885/RVD |

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

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

A list of all parts in the IEC 61162 series, published under the general title *Maritime navigation and radiocommunication equipment and systems -Digital interfaces*, can be found on the IEC website.

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

- 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 document 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 document specifies an Ethernet based bus type network where any listener can receive messages from any sender with the following properties.

- This document 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 file), for example between radar and VDR, and also includes provisions for multicast distribution of information formatted according to IEC 61162-3, for example position fixes and other measurements.
- This document 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 document provides requirements only for equipment interfaces. By specifying protocols for transmission of IEC 61162-1 sentences, IEC 61162-3 PGN messages and general binary file data, these requirements will guarantee interoperability between equipment implementing this document as well as a certain level of safe behaviour of the equipment itself.
- This document permits equipment using other protocols than those specified in this document to share a network infrastructure, provided that it is supplied with interfaces which satisfy the requirements described for ONF.
- This document includes provisions for filtering of the network traffic in order to limit the amount of traffic to manageable level for each individual equipment.

This document does not contain any system requirements other than the ones that can be inferred from the sum of individual equipment requirements. An associated standard, IEC 61162-460, further addresses system requirements.

## 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 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 61162-1:2016, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IEC 61162-3:2008, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Serial data instrument network*

IEEE Std 802.3-2015, *IEEE Standard for Ethernet*

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)*

RFC 793:1981, *Transmission Control Protocol (TCP)*

ISOC RFC 826, *An ethernet Address Resolution Protocol*

ISOC RFC 1112, *Host Extensions for IP Multicasting, Standard STD0005 (and updates),* (include IGMP version 1)

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

ISOC RFC 2236, *Internet Group Management Protocol, Version 2*

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

ISOC RFC 3376, *Internet Group Management Protocol, Version 3*

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.