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Marin navigerings- och kommunikationsutrustning – Digitala gränssnitt – Del 450: Flera sändare och flera mottagare – Ethernetbaserat nät

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

Som svensk standard gäller europastandarden EN IEC 61162-450:2018. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61162-450:2018.

Nationellt förord

Europastandarden EN IEC 61162-450:2018

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61162-450, Second edition, 2018 - Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection**

utarbetad inom International Electrotechnical Commission, IEC.

EN från CENELEC som är identiska med motsvarande IEC-standarder och som görs tillgängliga för nationalkommittéerna efter den 1 januari 2018 får en beteckning som inleds med EN IEC istället för som tidigare bara EN.

Tidigare fastställd svensk standard SS-EN 61162-450, utgåva 1, 2012 och SS-EN 61162-450/A1, utgåva 1, 2016, gäller ej fr o m 2021-06-08.

ICS 47.020.70

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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: Émetteurs 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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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

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 (dop) 2019-03-08
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2021-06-08
standards conflicting with the
document have to be withdrawn

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.

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

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

CONTENTS

FOREWORD.....	7
1 Scope.....	9
2 Normative references	9
3 Terms and definitions	10
4 General network and equipment requirements	14
4.1 Network topology example	14
4.2 Basic requirements	15
4.2.1 Requirements for equipment to be connected to the network	15
4.2.2 Additional requirements for network infrastructure equipment	16
4.3 Network function (NF) requirements.....	16
4.3.1 General requirements	16
4.3.2 Maximum data rate requirements.....	16
4.3.3 Error logging function	17
4.3.4 Provisions for network traffic filtering – IGMP	19
4.4 System function block (SF) requirements	19
4.4.1 General requirements	19
4.4.2 Assignment of unique system function ID (SFI).....	19
4.4.3 Implementing configurable transmission groups.....	20
4.5 Serial to network gateway function (SNGF) requirements.....	20
4.5.1 General requirements	20
4.5.2 Serial line output buffer management	21
4.5.3 Datagram output requirements.....	22
4.5.4 Multi SF serial port	22
4.5.5 Handling malformed data received on serial line	22
4.6 PGN to network gateway function (PNGF) requirements	23
4.6.1 General requirements	23
4.6.2 Output buffer management from IEC 61162-450 network to IEC 61162-3 network.....	23
4.6.3 Datagram output requirements.....	23
4.6.4 PGN group number	23
4.7 Other network function (ONF) requirements	24
5 Low level network requirements.....	24
5.1 Electrical and mechanical requirements	24
5.2 Network protocol requirements.....	25
5.3 IP address assignment for equipment	26
5.4 Multicast address range	26
5.5 Device address for instrument networks.....	26
6 Transport layer specification.....	26
6.1 General.....	26
6.2 UDP messages	27
6.2.1 UDP multicast protocol	27
6.2.2 Use of multicast addresses and port numbers.....	27
6.2.3 UDP checksum	29
6.2.4 Datagram size	29
7 Application layer specification.....	30
7.1 Datagram header	30

7.1.1	Valid header	30
7.1.2	Error logging.....	30
7.2	General IEC 61162-1 sentence transmissions.....	30
7.2.1	Application of this protocol.....	30
7.2.2	Types of messages for which this protocol can be used.....	30
7.2.3	TAG block parameters for sentences transmitted in the datagram.....	30
7.2.4	Requirements for processing incoming datagrams	34
7.2.5	Error logging for processing incoming datagrams	34
7.3	Binary file transfer using UDP multicast – Single transmitter, multiple receivers.....	34
7.3.1	Application of this protocol.....	34
7.3.2	Binary file structure.....	35
7.3.3	61162-450 header	35
7.3.4	Binary file descriptor structure	37
7.3.5	Binary file data fragment.....	38
7.3.6	Sender process for binary file transfer	39
7.3.7	Receiver process for binary file transfer.....	42
7.3.8	Other requirements.....	44
7.3.9	Error logging.....	46
7.4	General IEC 61162-3 PGN message transmissions.....	46
7.4.1	Message structure	46
7.4.2	Message format.....	47
7.4.3	Address translation requirements.....	47
7.4.4	Message processing	48
7.4.5	Additional management requirements	48
7.5	System function ID resolution.....	48
7.5.1	General	48
7.5.2	Transmitter functions	49
7.6	Binary file transfer using TCP point-to-point.....	49
7.6.1	Definition	49
7.6.2	Data field structure for transfer of files	50
7.6.3	Structure of the transfer stream	52
7.6.4	TCP port and IP addresses.....	52
7.6.5	Implementation guidance	52
8	Methods of test and required results	53
8.1	Test set-up and equipment.....	53
8.2	Basic requirements	54
8.2.1	Equipment to be connected to the network	54
8.2.2	Network infrastructure equipment	54
8.2.3	Documentation	54
8.3	Network function (NF)	54
8.3.1	Maximum data rate	54
8.3.2	Error logging function	55
8.4	System function block (SF)	55
8.4.1	General	55
8.4.2	Assignment of unique system function ID (SFI).....	55
8.4.3	Implementing configurable transmission groups.....	55
8.5	Serial to network gateway function (SNGF)	55
8.5.1	General	55

8.5.2	Serial line output buffer management	56
8.5.3	Datagram output.....	56
8.5.4	Datagram output multi SF serial port.....	56
8.5.5	Handling malformed data received on serial line	57
8.6	Other network function (ONF)	58
8.7	Low level network	59
8.7.1	Electrical and mechanical requirements	59
8.7.2	Network protocol.....	59
8.7.3	IP address assignment for equipment	59
8.7.4	Multicast address range.....	59
8.8	Transport layer	59
8.9	Application layer	60
8.9.1	Application.....	60
8.9.2	Datagram header.....	60
8.9.3	Types of messages.....	60
8.9.4	TAG block parameters	60
8.9.5	General authentication.....	61
8.10	Error logging	62
8.11	Binary file transfer using UDP multicast – Single transmitter, multiple receiver	62
8.11.1	Sender process test.....	62
8.11.2	Receiver process test	63
8.11.3	Binary file descriptor test	64
8.11.4	Binary file transfer error logging.....	64
8.11.5	Maximum outgoing rate	65
8.12	PGN to network gateway function (PNGF).....	65
8.12.1	General	65
8.12.2	Output buffer management	65
8.12.3	Datagram output.....	65
8.12.4	PGN group	65
8.12.5	Address conflicts	65
8.13	System function ID resolution.....	65
8.14	Binary file transfer using TCP point-to-point.....	65
8.14.1	Test of transmit client	66
8.14.2	Test of receiver server.....	66
8.14.3	Maximum outgoing rate	67
8.14.4	TCP port and IP addresses.....	67
Annex A (normative) Classification of IEC 61162-1 talker identifier mnemonics and sentences		68
A.1	General.....	68
A.2	Talker identifier mnemonic to transmission group mapping	68
A.3	List of all sentence formatters and the sentence type	70
Annex B (normative) TAG block definitions		74
B.1	Validity.....	74
B.2	Valid TAG block characters.....	74
B.3	TAG block format.....	74
B.4	TAG block "hexadecimal checksum" (*hh).....	75
B.5	TAG block "line"	75
B.6	TAG block parameter-code dictionary	76

Annex C (normative) Reliable transmission of command-response pair messages	77
C.1 Purpose	77
C.2 Information exchange examples	77
C.3 Characteristics	77
C.4 Requirements	77
C.5 Data flow description	78
C.5.1 Heartbeat message	78
C.5.2 Command response pair	78
Annex D (informative) Compatibility between IEC 61162-450 nodes based on IEC 61162-450:2011 connected to network which uses methods based on IEC 61162- 450:2018	79
D.1 General	79
D.2 Alternative methods for compatibility	79
D.2.1 Use of IGMP proxy node	79
D.2.2 Use of virtual LAN (VLAN)	79
D.2.3 Use of static multicast switch configuration	80
Annex E (informative) Use of switch setup configuration to filter network traffic	81
Annex F (normative) Sentence to support SFI collision detection	82
F.1 General	82
F.2 SRP – System function ID resolution protocol	82
Bibliography	83
 Figure 1 – Network topology example	15
Figure 2 – Ethernet frame example for a SBM from a rate of turn sensor	27
Figure 3 – Non re-transmittable sender process	40
Figure 4 – Re-transmittable sender process	42
Figure 5 – Re-transmittable receive process	44
Figure C.1 – Command response communications	77
 Table 1 – Syslog message format	18
Table 2 – Syslog error message codes	19
Table 3 – Interfaces, connectors and cables	25
Table 4 – Destination multicast addresses and port numbers	28
Table 5 – Destination multicast addresses and port numbers for binary data transfer	29
Table 6 – Destination multicast addresses and port numbers for other services	29
Table 7 – Description of terms	35
Table 8 – Binary file structure	35
Table 9 – 61162-450 header format	36
Table 10 – Binary file descriptor format	38
Table 11 – Examples of MIME content type for DataType codes	38
Table 12 – Binary file data fragment format	38
Table 13 – Structure for PGN message	46
Table 14 – PGN message descriptor	47
Table 15 – Description of terms	49
Table 16 – Binary file structure	50

Table 17 – Header structure	50
Table 18 – Package data structure.....	51
Table A.1 – Classification of IEC 61162-1 talker identifier mnemonics	68
Table A.2 – Classification of IEC 61162-1 sentences	70
Table B.1 – Defined parameter-codes.....	76

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MARITIME NAVIGATION AND RADIOCOMMUNICATION
EQUIPMENT AND SYSTEMS –
DIGITAL INTERFACES –****Part 450: Multiple talkers and multiple listeners –
Ethernet interconnection**

FOREWORD

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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>.