BS EN IEC 61162-1:2024

BSI Standards Publication

# Maritime navigation and radiocommunication equipment and systems — Digital interfaces

Part 1: Single talker and multiple listeners

bsi.

# National foreword

This British Standard is the UK implementation of EN IEC 61162-1:2024. It is identical to IEC 61162-1:2024. It supersedes BS EN 61162-1:2016, which will be withdrawn on 9 May 2027.

The UK participation in its preparation was entrusted to Technical Committee EPL/80, Maritime navigation and radiocommunication equipment and systems.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 20600 5

ICS 47.020.70

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2024.

**Amendments/corrigenda issued since publication**

| Date | Text affected |
|---|---|

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN IEC 61162-1

May 2024

ICS 47.020.70

Supersedes EN 61162-1:2016

English Version

# Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners (IEC 61162-1:2024)

Matériels et systèmes de navigation et de radiocommunication maritimes - Interfaces numériques - Partie 1: Émetteur unique et récepteurs multiples (IEC 61162-1:2024)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Digitale Schnittstellen - Teil 1: Ein Datensender und mehrere Datenempfänger (IEC 61162-1:2024)

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# European foreword

The text of document 80/1093/FDIS, future edition 6 of IEC 61162-1, 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 61162-1:2024.

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) | 2025-02-09 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2027-05-09 |

This document supersedes EN 61162-1:2016 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 61162-1:2024 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 standard indicated:

| | |
|---|---|
| IEC 61023 | NOTE Approved as EN 61023 |
| IEC 61108-1 | NOTE Approved as EN 61108-1 |
| IEC 61108-2 | NOTE Approved as EN 61108-2 |
| IEC 61108-3 | NOTE Approved as EN 61108-3 |
| IEC 61108-4 | NOTE Approved as EN 61108-4 |
| IEC 61108-5 | NOTE Approved as EN IEC 61108-5 |
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| IEC 61162-450 | NOTE Approved as EN IEC 61162-450 |
| IEC 61174 | NOTE Approved as EN 61174 |
| IEC 61924-2 | NOTE Approved as EN IEC 61924-2 |
| IEC 61993-2 | NOTE Approved as EN IEC 61993-2 |
| IEC 61996-1 | NOTE Approved as EN 61996-1 |
| IEC 61996-2 | NOTE Approved as EN 61996-2 |

| | |
|---|---|
| IEC 62065 | NOTE Approved as EN 62065 |
| IEC 62287-2 | NOTE Approved as EN 62287-2 |
| IEC 62288 | NOTE Approved as EN IEC 62288 |
| IEC 62320 (series) | NOTE Approved as EN 62320 (series) |
| IEC 62320-1 | NOTE Approved as EN 62320-1 |
| IEC 62320-2 | NOTE Approved as EN 62320-2 |
| IEC 62320-3 | NOTE Approved as EN 62320-3 |
| IEC 62388 | NOTE Approved as EN 62388 |
| IEC 62616 | NOTE Approved as EN 62616 |
| IEC 62923-1 | NOTE Approved as EN IEC 62923-1 |

# 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.cencenelec.eu.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60945 | - | Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results | EN 60945 | - |
| ISO/IEC 8859-1 | 1998 | Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No.1 | - | - |
| ITU-T Recommendation X.27/V.11 | 1996 | Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s | - | - |

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

## Part 1: Single talker and multiple listeners

## 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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IEC 61162-1 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems. It is an International Standard.

This sixth edition cancels and replaces the fifth edition published in 2016. This edition constitutes a technical revision.

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

a) alternative hardware is given in 5.1 which may now be as specified in this document or as specified in IEC 61162-2;
b) the data transmission rate given in Clause 6 is now configurable. The default remains as 4 800 (bits/s) but higher rates may be provided;

c) new identifiers have been added to Table 4;

d) new sentences AGL, EPM, GDC, NLS, SEL, SLM, SMV and VBC have been added;

e) revisions have been made to ABK, ABM, ACN, ALC, ALF, ARC, BBM, DDC, DTM, EPV, FIR, GBS, GFA, GLL, GNS, GRS, GSA, GST, GSV, HRM, NRX, POS, RLM, ROR, RSA, TLB, TTD, VSD and XDR;

f) the previous Annex A, Glossary, has been deleted as being of historical interest.

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

| Draft | Report on voting |
|---|---|
| 80/1093/FDIS | 80/1097/RVD |

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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# INTRODUCTION

The IEC 61162 series consists of 5 parts which specify digital interfaces for application in marine navigation, radiocommunication and system integration, as follows:

IEC 61162-1: Single talker and multiple listeners;

IEC 61162-2: Single talker and multiple listeners, high speed transmission;

IEC 61162-3: Serial data instrument network;

IEC 61162-450: Multiple talkers and multiple listeners – Ethernet interconnection;

IEC 61162-460: Multiple talkers and multiple listeners – Ethernet interconnection – Safety and security

IEC technical committee 80 interface standards are developed with input from manufacturers, private and government organisations and equipment operators. The information is intended to meet the needs of users at the time of publication, but users should recognise that as applications and technology change, interface standards should change as well. Users of this document are advised to immediately inform the IEC of any perceived inadequacies therein.

The first edition of IEC 61162-1 was published in 1995. The second edition published in 2000 removed some sentences which were no longer in use, added some new sentences and included details of the ship equipment defined in IMO resolutions together with appropriate sentences for communication between them. This information was subsequently removed from the third edition when it became the practice to specify the sentence formatters in the individual standards for equipment.

The third edition published in 2007 introduced a re-arrangement of the text and new sentences particularly to support the automatic identification system and the voyage data recorder. The third edition also introduced a further type of start of sentence delimiter. The conventional delimiter "$" was retained for the conventional sentences which are now called "parametric sentences". The new delimiter "!" identifies sentences that conform to special purpose encapsulation.

The fourth edition removed some sentences which were not in use, added some new sentences for new applications and made some corrections and additions. In particular, the sentences of relevance to satellite navigation receivers were expanded to facilitate the description of new satellite systems.

The fifth edition also removed some sentences which were no longer in use, added some new sentences for new applications and made some corrections and additions.

This sixth edition adds some new sentences for new applications and makes some corrections and additions.

This edition has been aligned where appropriate and possible with NMEA 0183 version 4.10.

# MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

## Part 1: Single talker and multiple listeners

## 1 Scope

This part of IEC 61162 contains the requirements for data communication between maritime electronic instruments, navigation and radiocommunication equipment when interconnected via an appropriate system.

This document is intended to support one-way serial data transmission from a single talker to one or more listeners. These data are in printable ASCII form and can include information such as position, speed, depth, frequency allocation, etc. Typical messages can be from about 11 to a maximum of 79 characters in length and generally require transmission no more rapidly than one message per second.

The electrical definitions in this document are not intended to accommodate high-bandwidth applications such as radar or video imagery, or intensive database or file transfer applications. Since there is no provision for guaranteed delivery of messages and only limited error checking capability, it is important this document is used with caution in all safety applications.

For applications where a faster transmission rate is necessary, IEC 61162-2 applies.

For applications to shore based equipment of the automatic identification system (AIS) the IEC 62320 series applies.

## 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 60945, *Maritime navigation and radiocommunication equipment and systems – General requirements - Methods of testing and required test results*

ISO/IEC 8859-1:1998, *Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1*

ITU-T Recommendation X.27/V.11:1996, *Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s*

## 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp