

Maritime navigation and radiocommunication equipment and systems — Digital interfaces —

Part 2: Single talker and multiple listeners, high-speed transmission

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee EPL/80, Marine navigation and radiocommunication equipment and systems, which has the responsibility to:

- aid enquirers to understand the text;
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Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 20 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 February 1999

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English version

Maritime navigation and radiocommunication equipment
and systems Digital interfaces
Part 2: Single talker and multiple listeners, high-speed
transmission

(IEC 61162-2:1998)

Matériels et systèmes de navigation et de
radiocommunication maritimes Interfaces
numériques
Partie 2: Emetteur unique et récepteurs
multiples, transfert rapide de données
(CEI 61162-2:1998)

Navigations- und Funkkommunikationsgeräte
und — systeme für die Seeschifffahrt Digitale
Schnittstellen
Teil 2: Ein Datensender und mehrere
Datenempfänger,
Hochgeschwindigkeitsübertragung
(IEC 61162-2:1998)

This European Standard was approved by CENELEC on 1998-10-01. 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.

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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 80/189/FDIS, future edition 1 of IEC 61162-2, 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 61162-2 on 1998-10-01.

- 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) 1999-07-01
 - latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-07-01

Annexes designated “normative” are part of the body of the standard.
Annexes designated “informative” are given for information only.
In this standard, Annex ZA is normative and Annex A and Annex B are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61162-2:1998 was approved by CENELEC as a European Standard without any modification.

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1 General

1.1 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 interface.

This standard is intended to support one-way serial data transmission from a single talker to one or more listeners. This data is in printable ASCII form and may include any information as specified by approved sentences or information coded according to the rules for proprietary sentences. Typical messages may be from 11 to a maximum of 79 characters in length and generally require repetition rates up to once per 20 ms.

The electrical definitions in this standard are intended to accommodate higher data rates than are specified in IEC 61162-1. Since there is no provision for guaranteed delivery of messages and only limited error-checking capability, this standard should be used with caution in all safety applications.

Annex A contains a list of relevant IMO resolutions and ITU recommendations to which this standard applies.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61162. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61162 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60945:1996, *Maritime navigation and radiocommunication equipment and systems — General requirements, methods of testing and required test results*.

IEC 61162-1:1995, *Maritime navigation and radiocommunication equipment and systems — Digital interfaces — Part 1: Single talker and multiple listeners*.

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

NMEA 0183-Version 2.30:1998, *National marine electronics association (USA) — Standard for interfacing marine electronic navigational devices*.

EIA 485:1991, *Electrical characteristics of generators and receivers for use in balanced digital multipoint systems*.

1.3 Definitions

Common terms are defined in the glossary of Annex B. Where there is a conflict, terms shall be interpreted, wherever possible, in accordance with the references in 1.2.

For the purposes of this part of IEC 61162, the following definitions apply.

talker

any device which sends data to other devices. The type of talker is identified by a two-character mnemonic as listed in 6.2 (Table 4) of IEC 61162-1

listener

any device which receives data from another device

latency

time interval between an event and its resulting information, including time for processing, transmission and/or reception

2 Manufacturer's documentation

2.1 Standard documents

Operator manuals or other appropriate literature provided for equipment that is intended to meet the requirements of this standard shall contain as a minimum the following information:

- a) identification of the A, B and common (C) signal lines;
- b) the output drive capability as a talker;
- c) a list of approved sentences, noting unused fields, proprietary sentences transmitted as a talker, data latency and transmission interval for each sentence;
- d) the load requirements as a listener;
- e) a list of sentences and associated data fields that are required by, or are acceptable to, a listener;
- f) the current software and hardware revision if this is relevant to the interface;
- g) an electrical description or schematic of the listener/talker input/output circuits citing actual components and devices used, including connector type and part number;
- h) the version number and date of update of the standard for which compliance is sought.

2.2 Additional information

As latency, filtering, error handling and data transmission interval can have a serious influence on the performance of a system, the manufacturer shall give careful consideration to these aspects. Documentation should include such data where applicable.

3 Hardware specification

One talker and multiple listeners may be connected in parallel over interconnecting wires. Because of EMC requirements shielded cables are recommended. The number of listeners depends on the output capability, the input drive requirements of the connected devices, and on the use of termination resistors.

3.1 Interconnecting wires

Interconnection between devices may be by means of a shielded two-conductor twisted-pair wire (A, B) plus any means to secure common signal ground potential (C) for transmitting and receiving devices. For this purpose, a third wire additional to the twisted pair or the inner shield of double-shielded cable with insulated shields may be used.

3.2 Conductor definitions

The conductors referred to in this standard are the signal lines A, B, C (common) and shield.

3.3 Electrical connection/shield requirements

All signal and common line connections A, B and C are connected in parallel.

With single-shielded cables and a separate wire as common line C (signal ground), the shield shall be connected to the talker chassis and shall not be connected to any listener. However, the shield shall be continuous (unbroken) between all listeners [see Figure 1 and Figure 2 a)].

With double-shielded cables and the inner shield used as common line C (signal ground), the outer shield shall be connected to the talker chassis and shall not be connected to any listener. However, the outer shield shall be continuous (unbroken) between all listeners [see Figure 1 and Figure 2 b)].

With double-shielded cables and a separate wire as common line C (signal ground), the inner shield shall be connected to the talker chassis and shall not be connected to any listener. However, the inner shield shall be continuous (unbroken) between all listeners. The outer shield may be connected to the chassis on either side if required [see Figure 1 and Figure 2 b)].

The cabling shall be designed in a way that stubs are avoided or kept as short as possible. If long cables are necessary, termination at the end of the line according to ITU-T V.11 shall be considered.

3.4 Connector

No standard connector is specified. Wherever possible readily available commercial connectors shall be used. Manufacturers shall provide means for user identification of the connections used.

3.5 Electrical signal characteristics

This subclause describes the electrical characteristics of transmitters and receivers.