SVENSK STANDARD SS-EN 61162-3

Fastställd	Utgåva	Sida	Ansvarig kommitté
2009-02-23	1	1 (1+17)	SEK TK 80

Marin navigerings- och kommunikationsutrustning – Digitala gränssnitt – Del 3: Seriellt datanät för instrument och utrustning

Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Serial data instrument network

Som svensk standard gäller europastandarden EN 61162-3:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61162-3:2008.

Nationellt förord

Europastandarden EN 61162-3:2008

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61162-3, First edition, 2008 - Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 3: Serial data instrument network**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 47.020.70

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Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61162-3

September 2008

ICS 47.020.70

English version

Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 3: Serial data instrument network

(IEC 61162-3:2008)

Matériels et systèmes de navigation et de radiocommunication maritimes - Interfaces numériques - Partie 3: Réseau par liaison de données série d'instruments (CEI 61162-3:2008)

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Digitale Schnittstellen - Teil 3: Serielles Dateninstrumentenetz (IEC 61162-3:2008)

This European Standard was approved by CENELEC on 2008-06-01. 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 two official versions (English and 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, 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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61162-3:2008 E

SEK Svensk Elstandard

Foreword

The text of document 80/496/CDV, future edition 1 of IEC 61162-3, 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 61162-3 on 2008-06-01.

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)	2009-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-06-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61162-3:2008 was approved by CENELEC as a European Standard without any modification.

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 60945	-[1)]	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	2002[2)]
ISO 11783	Series	Tractors and machinery for agriculture and forestry - Serial control and communications data network	-	-
ISO 11783-3	-[1)]	Tractors and machinery for agriculture and forestry - Serial control and communications data network - Part 3: Data link layer	-	-
ISO 11783-5 + corr. 1	2001 2002	Tractors and machinery for agriculture and forestry - Serial control and communications data network - Part 5: Network management	-	-
NMEA 2000 Main document, Version 1.200	2004	Serial-Data Networking of Marine Electronic Devices	-	-
NMEA 2000, Appendix A, Version 1.200	2004	Serial-Data Networking of Marine Electronic Devices - Application Layer (Parameter Group Definitions)	-	-
NMEA 2000, Appendix B, Version 1.210	2006	Serial-Data Networking of Marine Electronic Devices - Data Base	-	-
NMEA 2000, Appendix C, Version 1.200	2004	Serial-Data Networking of Marine Electronic Devices - Certification Criteria and Test Methods	-	-
NMEA 2000, Appendix D, Version 1.200	2004	Serial-Data Networking of Marine Electronic Devices - Application Notes	-	-
IMO amended	1974	International Convention for the Safety of Life at Sea (SOLAS) - Chapter V: Safety of navigation	-	-

[1)] Undated reference.

[2)] Valid edition at date of issue.

CONTENTS

INTRODUCTION

This part of IEC 61162 has been developed by the IEC technical committee 80 working group 6, to meet the requirement for a versatile and economic means of connecting a wide range of marine navigation and radiocommunications equipment aboard SOLAS vessels. The National Marine Electronics Association's Standard Committee has developed the NMEA 2000®[1] standard. The NMEA[2] 2000 Standard provides for capabilities across all classes of vessels. The development of NMEA 2000 began in 1994 and was completed in 1999. More than a dozen manufacturers worldwide conducted a two-year beta test. The finalised NMEA 2000 standard version 1.000 was published in 2001. IEC and NMEA have worked together since 1999 to ensure that the NMEA 2000 standard fully supports SOLAS applications. NMEA 2000 version 1.200 was published in 2004, with expanded support for redundant messaging and for equipments such as AIS.

The need for an improved standard, compared with IEC 61162-1 and IEC 61162-2, has arisen due to the increased complexity of the latest equipment and systems. This requires multiple links between equipment and greatly improved communication speed.

The parts 400 of the IEC 61162 series have already been issued and cater for the most complex systems to be found on board a ship.

This new part 3 of IEC 61162 adopts the controller area network (CAN) technology, already well established for many industrial systems. This permits a versatile system to be established with the minimum of effort and reasonable cost. The equipment types supported and the sentence data content developed for IEC 61162-1 has been retained.

IEC 61162-3 describes a low cost, moderate capacity, bi-directional multi-transmitter/multi-receiver instrument network to interconnect marine electronic equipment. The connectors and cables used are compatible with industrial bus systems for instance DeviceNet™[3] and Profibus™[4].

IEC 61162-3 provides for the application of NMEA 2000 aboard SOLAS vessels. Exceptions, additions and specific requirements for implementation upon SOLAS vessels are contained in this document.

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1 NMEA 2000® is the registered trademark of the National Marine Electronics Association, Inc. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trade name. Use of the trade name requires permission of the trade holder.

2 NMEA is the registered trademark of the National Marine Electronics Association, Inc. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trade name. Use of the trade name requires permission of the trade holder.

3 DeviceNet™ is the registered trademark of the Open DeviceNet Vendor Association, Inc. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trade name. Use of the trade name requires permission of the trade holder.

4 Profibus™ is the registered trademark of PROFIBUS International. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trade name. Use of the trade name requires permission of the trade holder.

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 3: Serial data instrument network

1 Scope

This part of IEC 61162 is based upon the NMEA 2000 standard. The NMEA 2000 standard contains the requirements for the minimum implementation of a serial-data communications network to interconnect marine electronic equipment onboard vessels. Equipment designed to this standard will have the ability to share data, including commands and status, with other compatible equipment over a single signalling channel.

Data messages are transmitted as a series of data frames, each with robust error check confirmed frame delivery and guaranteed latency times. As the actual data content of a data frame is at best 50 % of the transmitted bits, this standard is primarily intended to support relatively brief data messages, which may be periodic, transmitted as needed, or on-demand by use of query commands. Typical data includes discrete parameters such as position latitude and longitude, GPS status values, steering commands to autopilots, finite parameter lists such as waypoints, and moderately sized blocks of data such as electronic chart database updates. This standard is not necessarily intended to support high-bandwidth applications such as radar, electronic chart or other video data, or other intensive database or file transfer applications.

This standard defines all of the pertinent layers of the International Standards Organisation Open Systems Interconnect (ISO/OSI) model, from the application layer to the physical layer, necessary to implement the required IEC 61162-3 network functionality.

This standard defines data formats, network protocol, and the minimum physical layer necessary for devices to interface. SOLAS applications shall employ redundant designs (for instance dual networks, redundant network interface circuits) to reduce the impact of single point failures. The NMEA 2000 standard provides the fundamental tools and methods to support redundant equipment, buses and messaging. Specific shipboard installation designs are beyond the scope of this standard, however some guidance is given in Annex A.

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

ISO 11783 (all parts), *Tractors and machinery for agriculture and forestry – Serial control and communications data network*

ISO 11783-3, *Tractors and machinery for agriculture and forestry – Serial control and communications data network – Part 3: Data link layer*