SLOVENSKI STANDARD
SIST EN 61162-410:2004

01-september-2004

Pomorska navigacijska in radiokomunikacijska oprema in sistemi – Digitalni vmesniki - 410. del: Več govorcev (pošiljateljev) in več poslušalcev (prejemnikov); povezava sistemov - Zahteve transportnih profilov in osnovni transportni profil

Maritime navigation and radiocommunication equipment and systems - Digital interfaces -- Part 410: Multiple talkers and multiple listeners - Ship systems interconnection - Transport profile requirements and basic transport profile

Navigations- und Funkkommunikationsgeräte und -systeme für die Seeschifffahrt - Digitale Schnittstellen -- Teil 410: Mehrere Datensender und mehrere Datenempfänger - Schiffssystemzusammenschaltung - Anforderungen an Transportprofile und Basistransportprofil

Matériels et systèmes de navigation et de radiocommunications maritimes - Interfaces numériques -- Partie 410: Emetteurs multiples et récepteurs multiples - Interconnexion des systèmes embarqués - Exigences de la couche transport et couche transport de base

Ta slovenski standard je istoveten z: **EN 61162-410:2002**

ICS:

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

SIST EN 61162-410:2004 **en**

EUROPEAN STANDARD **EN 61162-410**

NORME EUROPÉENNE

EUROPÄISCHE NORM February 2002

ICS 47.020.70

English version

Maritime navigation and radiocommunication equipment and systems - Digital interfaces Part 410: Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile

(IEC 61162-410:2001)

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This European Standard was approved by CENELEC on 2002-02-01. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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 61162-410:2002 E

Foreword

The text of document 80/311/FDIS, future edition 1 of IEC 61162-410, 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 61162-410 on 2002-02-01.

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) 2002-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-02-01

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 annexes A, B, C and D are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61162-410:2001 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 61162-400	- [1)]	Maritime navigation and radiocommunication equipment and systems - Digital interfaces Part 400: Multiple talkers and multiple listeners - Ship systems interconnection - Introduction and general principles	EN 61162-400	- [1)]
ISO 8802-3	- [1)]	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications	-	-
ISO/IEC 9595	- [1)]	Information technology - Open Systems Interconnection - Common management information service	-	-
ISO/IEC 9596-1	- [1)]	Information technnology - Open Systems Interconnection - Common management information protocol -- Part 1: Specification	-	-
RFC 768	1980	User Datagram Protocol (UDP), Internet Activities Board recommended standard	-	-
RFC 793	1981	Transmission Control Protocol (TCP), Internet Activities Board recommended standard	-	-
RFC 826	1982	Address Resolution Protocol (ARP), Internet Activities Board elective standard	-	-

[1)] Undated reference.

Publication	Year	Title	EN/HD	Year
RFC 894	1984	Internet Protocol on Ethernet Networks, Internet Activities Board elective standard	-	-
RFC 1157	1990	Simple Network Management Protocol (SNMP)	-	-
RFC 1189	1990	Common Management Information Services and Protocols for the Internet (CMOT and CMIP)	-	-
RFC 1213	1991	Management Information Base for Network Management of TCP/IP-based Internets: MIB-II	-	-
RFC 1305	1992	Network Time Protocol, Version 3 - Specification and Implementation	-	-
RFC 2030	1996	Simple Network Time Protocol (SNTP), Version 4 for IPv4, IPv6 and OSI	-	-
RFC 2500	1999	Inernet Official Protocol Standards - Internet Activities Board standard	-	-

INTERNATIONAL STANDARD

IEC 61162-410

First edition
2001-11

Maritime navigation and radiocommunication equipment and systems – Digital interfaces –

Part 410: Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XB

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 410: Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.

4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61162-410 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems

The text of this standard is based on the following documents:

FDIS	Report on voting
80/311/FDIS	80/326/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The special typographical conventions and nomenclature used in this standard are defined in IEC 61162-400 annex A.

Annexes A, B, C and D are for information only.

The committee has decided that the contents of this publication will remain unchanged until June 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

International Standard IEC 61162 is a four-part standard which specifies four digital interfaces for applications in marine navigation, radiocommunication and system integration.

The four parts are:

IEC 61162-1 Single talker and multiple listeners

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

IEC 61162-3 Multiple talkers and multiple listeners – Serial data instrument network

IEC 61162-4 Multiple talkers and multiple listeners – Ship systems interconnection.

Part 4 of the standard is subdivided into a number of individual standards with part numbers in the 400 series.

This part of the standard contains the specification of the requirements to an IEC 61162-4 transport profile (T-profile) and also the specification of one implementation, based on redundant Ethernet and Internet protocol functionality. The T-profile is the protocol transport mechanisms that offer simple message or byte stream transport services to the higher protocol layers (defined in other parts of the standard). In addition, the T-profile also offers services for time distribution and physical network management.

The use of Internet and Ethernet protocols offer low cost and high efficiency data transport in any kind of system. However, for safety related applications, certain measures have to be taken to avoid that particulars of office-quality and off-the-shelf technology create safety risks. This part of the standard specifies mechanisms by which a certain degree of quality of service can be guaranteed from these networks, including the provision of redundancy.

Other T-profile documents will be prepared with specifications of the same T-profile requirements over other transport protocols. This will be issued in the same number series as this standard (IEC 61162-41x).

Relationship with the other parts of the IEC 61162 series of standards is defined in annex B to IEC 61162-400.

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 410: Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile

1 Scope and object

This part of IEC 61162-4 defines the general requirements of the T-profile and three implementations of the T-profile over the Internet V4 (IPV4) protocol suite. Part 400 of this standard defines the relationship between the different protocol levels (T-profile, A-profile and companion standards) and part 401 defines the A-profile, the immediate user of the protocol level defined in this part.

The different components of the IEC 61162-4 standard are defined in IEC 61162-400. The T-profile is the specification of the communication services and the communication protocols used by the LNA to implement the A-profile functionality. Basically, the T-profile consists of the following components:

a) a transport layer interface (TLI) definition that specifies the services and the semantics that will be available to the application level of the LNA (and in some cases the MAU). This includes data transport as well as time and network management services. The TLI will be general to all T-profiles and is defined in this part 410 of the standard,

b) A T-profile protocol definition that specifies how the services provided by the TLI and additional time distribution and physical network management services are implemented on the protocol level. This part 410 contains a number of alternative T-profile protocol specifications using the Internet V4 series of standards. Additional parts of this standard will address other T-profiles based on other protocol families.

Note that the time distribution and network management functionality may or may not include specific TLI services. For some systems this functionality may be interfaced to directly by the underlying operating system. Note also that time distribution and network management are not strictly speaking transport related protocol functionality. However, the implementation of these services is normally dependent on the transport protocols in use and is, thus, placed in the T-profile part of the standard.

The purpose of this standard is to define and describe the services that will be provided at the transport level interface in a way which is completely independent of the underlying network environment as well as defining one possible implementation of these services over the Internet V4 protocols. The separation of service and protocol definitions allows the specification of several different transport profiles, each one dedicated to a specific network environment, and to use the same transport service interface in all cases.

Clause 4 defines the transport level services and clause 5 describes the transport layer interface through which the services are offered. These clauses define the general, network independent services.

Clause 6 defines the transport profile architecture for redundant Ethernet and Internet protocols version 4 (IPV4). Clause 7 defines the architecture for a local area non-redundant Internet network. These clauses define two specific implementations of the T-profile services.

Clause 8 defines a simple MAU-LNA protocol for use over wide area network (WAN) TCP/IP links. This can be used to implement a WAN architecture for the overall system. The WAN architecture is not intended for integrated ship control systems, but can be used for remote test integration and remote maintenance and diagnostics. The WAN protocol can also be used to support MAUs that are located in other host computers than the LNA, but on one local network (conformance class 4).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61162. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, 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. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61162-400, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 400: Multiple talkers and multiple listeners – Ship systems interconnection – Introduction and general principles*

ISO 8802-3, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*

ISO/IEC 9595: *Information technology – Open Systems Interconnection – Common management information service*

ISO/IEC 9596-1: *Information technology – Open Systems Interconnection – Common management information protocol – Part 1: Specification*

RFC 768:1980, *User Datagram Protocol (UDP), Internet Activities Board recommended standard*

RFC 793:1981, *Transmission Control Protocol (TCP), Internet Activities Board recommended standard*

RFC 826:1982, *Address Resolution Protocol (ARP), Internet Activities Board elective standard*

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RFC 1213:1991, *Management Information Base for Network Management of TCP/IP-based Internets: MIB-II*

RFC 1305:1992, *Network Time Protocol, Version 3 – Specification and Implementation*

RFC 2030:1996, *Simple Network Time Protocol (SNTP), Version 4 for IPv4, IPv6 and OSI*

RFC 2500:1999, *Internet Official Protocol Standards – Internet Activities Board standard*