

**Maritime navigation and  
radiocommunication equipment and  
systems – Digital interfaces Part 402:  
Multiple talkers and multiple listeners –  
Ship systems interconnection –  
Documentation and test requirements**

Maritime navigation and radiocommunication  
equipment and systems – Digital interfaces Part 402:  
Multiple talkers and multiple listeners – Ship systems  
interconnection – Documentation and test  
requirements

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 61162-402:2005 sisaldab Euroopa standardi EN 61162-402:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.12.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 61162-402:2005 consists of the English text of the European standard EN 61162-402:2005.</p> <p>This document is endorsed on 19.12.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b> Specifies a minimum set of tests to be done, test results to be achieved and documents that shall be available for all implementations of general protocol software and applications that are compliant with the IEC 61162-4 standard.</p>	<p><b>Scope:</b> Specifies a minimum set of tests to be done, test results to be achieved and documents that shall be available for all implementations of general protocol software and applications that are compliant with the IEC 61162-4 standard.</p>
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**ICS** 47.020.70

**Võtmesõnad:**

**Maritime navigation and radiocommunication equipment and systems –  
Digital interfaces  
Part 402: Multiple talkers and multiple listeners –  
Ship systems interconnection –  
Documentation and test requirements  
(IEC 61162-402:2005)**

Matériels et systèmes de navigation  
et de radiocommunication maritimes –  
Interfaces numériques  
Partie 402: Émetteurs et récepteurs  
multiples –  
Interconnexion des systèmes maritimes –  
Documentation et exigences d'essai  
(CEI 61162-402:2005)

Navigations- und Funk-  
kommunikationsgeräte und -systeme  
für die Seeschifffahrt –  
Digitale Schnittstellen  
Teil 402: Mehrere Datensender und  
mehrere Datenempfänger –  
Schiffssystemzusammenschaltung –  
Dokumentation und Prüfanforderungen  
(IEC 61162-402:2005)

This European Standard was approved by CENELEC on 2005-10-01. 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 two official versions (English, 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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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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

## Foreword

The text of document 80/411/FDIS, edition 1 of IEC 61162-402, 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 61162-402 on 2005-10-01.

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) | 2006-07-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn                                               | (dow) | 2008-10-01 |

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 61162-402:2005 was approved by CENELEC as a European Standard without any modification.

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## 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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60092-504	- <sup>1)</sup>	Electrical installations in ships Part 504: Special features - Control and instrumentation	-	-
IEC 60945	- <sup>1)</sup>	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	2002 <sup>2)</sup>
IEC 61162-4xx	Series	Maritime navigation and radio-communication equipment and systems - Digital interfaces Part 4xx: Multiple talkers and multiple listeners - Ship systems interconnection	EN 61162-4xx-	Series
IEC 61162-400	- <sup>1)</sup>	Part 400: Multiple talkers and multiple listeners - Ship systems interconnection - Introduction and general principles	EN 61162-400	2002 <sup>2)</sup>
IEC 61162-401	- <sup>1)</sup>	Part 401: Multiple talkers and multiple listeners - Ship systems interconnection - Application profile	EN 61162-401	2002 <sup>2)</sup>
IEC 61162-410	- <sup>1)</sup>	Part 410: Multiple talkers and multiple listeners - Ship systems interconnection - Transport profile requirements and basic transport profile	EN 61162-410	2002 <sup>2)</sup>
IEC 61162-420	- <sup>1)</sup>	Part 420: Multiple talkers and multiple listeners - Ship systems interconnection - Companion standard requirements and basic companion standards	EN 61162-420	2002 <sup>2)</sup>

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61209	- <sup>1)</sup>	Maritime navigation and radiocommunication equipment and systems - Integrated bridge systems (IBS) - Operational and performance requirements, methods of testing and required test results	EN 61209	1999 <sup>2)</sup>
IEC 61508-3	- <sup>1)</sup>	Functional safety of electrical/electronic/programmable electronic safety-related systems Part 3: Software requirements	EN 61508-3	2001 <sup>2)</sup>
IEC 61508-4	- <sup>1)</sup>	Part 4: Definitions and abbreviations	EN 61508-4	2001 <sup>2)</sup>
ISO 9001	2000	Quality management systems - Requirements	EN ISO 9001	2000
ISO/IEC 90003	2004	Software engineering - Guidelines for the application of ISO 9001:2000 to computer software	-	-

# INTERNATIONAL STANDARD

**IEC**  
**61162-402**

First edition  
2005-09

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**Maritime navigation and radiocommunication  
equipment and systems – Digital interfaces –**

**Part 402:  
Multiple talkers and multiple listeners –  
Ship systems interconnection –  
Documentation and test requirements**



Reference number  
IEC 61162-402:2005(E)

## Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

## Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

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International Electrotechnical Commission  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

### Part 402: Multiple talkers and multiple listeners – Ship systems interconnection – Documentation and test requirements

## 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 61162-402 has been prepared by 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
80/411/FDIS	80/421/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 2.

IEC 61162 consists of the following parts, under the general title *Maritime navigation and radiocommunication equipment and systems – Digital interfaces*:

Part 1:	Single talker and multiple listeners
Part 2:	Single talker and multiple listeners, high-speed transmission
Part 3:	Multiple talkers and multiple listeners – Serial data instrument network (under consideration)
Part 400:	Multiple talkers and multiple listeners – Ship systems interconnection – Introduction and general principles
Part 401:	Multiple talkers and multiple listeners – Ship systems interconnection – Application profile
Part 402:	Multiple talkers and multiple listeners – Ship systems interconnection – Documentation and test requirements
Part 410:	Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile
Part 420:	Multiple talkers and multiple listeners – Ship systems interconnection – Companion standard requirements and basic companion standards

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication 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 402: Multiple talkers and multiple listeners – Ship systems interconnection – Documentation and test requirements**

### **1 Scope**

#### **1.1 General**

This standard series, IEC 61162-400 and upwards, specifies a communication protocol for use in integrated ship systems. It also specifies an interface description language for use together with the protocol, a set of rules for the use of this language and a set of standard interfaces described in the language.

This part of the standard specifies a minimum set of tests to be done, test results to be achieved and documents that shall be available for all implementations of general protocol software and applications that are compliant with the IEC 61162-4 standard. Although this set of standard documents is collectively referred to as IEC 61162-4, the actual part numbers are in the 400-series (see 1.4 of IEC 61162-400).

#### **1.2 Limitations in scope**

The tests and documentation requirements do not cover electrical, physical or environmental requirements that may apply to the use of software or computers onboard ships. Such requirements may be covered by IEC 60945 or IEC 60092-504. Other standards may also be applicable.

This standard does not necessarily cover all requirements from classification societies or other authorities. It is the responsibility of the user of this standard to ensure that all appropriate regulations are addressed.

This standard contains tests to check that an application using the IEC 61162-4 protocol adheres to its advertised interface specification. These tests cannot guarantee the correct functionality of that application beyond the possibility of connecting it to the network and with a limited degree of accuracy in the messages transferred.

This standard does not cover the system in which the IEC 61162-4 communication standard is used. Additional requirements will normally apply to the total system configuration.

Fundamental requirements relating to ensuring reliable and timely transfer of data across data communication links are included in other standards associated with the integration of equipment such as IEC 60092-504 and IEC 61209. This standard does not contain tests to verify compliance with these requirements. In addition, specific equipment related standards may also contain requirements for correctness and timeliness of data transmissions. Neither does this standard contain any tests to verify such requirements. Thus, results from tests carried out in accordance with this standard cannot be used to demonstrate compliance with the requirements of any other standards for system or equipment functionality.

### 1.3 Limitations in test coverage

The test plan only specifies general tests of the protocols and a limited set of other general properties (black box tests). The test procedures will not generally cover tests of operating systems, communication libraries or other software components that are used to implement the standard. Neither does this standard specify any tests related to the way the system is implemented (white or glass box testing).

### 1.4 Limitations in degree of detail

The test procedures are general in nature and do not generally specify detailed test programs and procedures. The procedures specify a minimum set of functional aspects that need to be tested, with, in some cases, a minimum required set of excitations and corresponding required responses. The testers must develop the detailed procedures and test tools themselves.

## 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 60092-504, *Electrical Installations in ships – Special features – Control and instrumentation*

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

IEC 61162-4, (shorthand for all parts in the IEC 61162-400 series), *Maritime navigation and radio-communication equipment and systems – Digital interfaces – Part 4xx: Multiple talkers and multiple listeners – Ship systems interconnection*

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*

IEC 61162-401, *Multiple talkers and multiple listeners – Ship systems interconnection – Application profile*

IEC 61162-410, *Multiple talkers and multiple listeners – Ship systems interconnection – Transport profile requirements and basic transport profile*

IEC 61162-420, *Multiple talkers and multiple listeners – Ship systems interconnection – Companion standard requirements and basic companion standards*

IEC 61209, *Maritime navigation and radiocommunication equipment and systems – Integrated Bridge Systems (IBS) – Operational and performance requirements, methods of testing and required test results*

IEC 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 3: Software requirements.*

IEC 61508-4, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 4: Definitions and abbreviations*

ISO 9001: 2000, *Quality management systems – Requirements.*

ISO/IEC 90003: 2004, *Software engineering – Guidelines for the application of ISO 9001: 2000 to computer software.*