INTERNATIONAL STANDARD

IEC 61162-420

First edition
2001-11

Maritime navigation and radiocommunication equipment and systems – Digital interfaces –

Part 420: Multiple talkers and multiple listeners – Ship systems interconnection – Companion standard requirements and basic companion standards

Reference number
IEC 61162-420:2001(E)

Publication numbering

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XA

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 420: Multiple talkers and multiple listeners – Ship systems interconnection – Companion standard requirements and basic companion standards

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.
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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 61162-420 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
80/312/FDIS	80/327/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, D, E and F form an integral part of this standard.

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 this standard is sub-divided into a number of individual standards with part numbers in the 400 series.

IEC 61162-420 contains the specification of a description language for IEC 61162-4 series companion standards (user layer specifications), a framework for the organization of such companion standard descriptions and also the descriptions of basic components that can be used as a starting point to build IEC 61162-4 series components and networks.

Later standards in the companion standard series (IEC 61162-42x) are expected to address more concrete interface requirements for specific navigational equipment.

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 420: Multiple talkers and multiple listeners – Ship systems interconnection – Companion standard requirements and basic companion standards

1 Scope and object

International Standard IEC 61162-420 specifies the requirement for and basic components of the IEC 61162-4 series companion standards. These components are referred to as follows:

a) **PCS** (PISCES companion standards) which contain the rules for creation of companion standards. The general principles underlying the PCS are described in clause 4.

b) **PCSDL** (PCS description language). Part of the PCS is the definition of the syntax for the various types of companion standard documents that make them readable by computer tools. The PCSDL is described in clause 5.

c) **function block** description. The function block description is a high level and graphical description of applications using the IEC 61162-4 series interface standard. The function block syntax is specified in clause 7.

d) **PFS** (PISCES foundation specifications) which contain a framework for classification of applications adhering to the IEC 61162-4 standard. The PFS will also provide a minimum level of interoperability between different manufacturers' applications using this framework. The PFS is described in clause 6.

Clause 5 contains the complete reference to the PCS description language. Subclause 5.2 explains the basic concept of the PCS which is given by the distinction between four types of specifications: applications, interfaces, information and data types. General conventions with respect to the syntax of the PCS can be found in 5.3. All PCS documents are based on a similar structure. This approach is intended to make it easier to become familiar with the syntax and semantics of the PCS which is defined in 5.3.1. The four subclauses thereafter explain in detail the syntax and semantics of the four different types of specifications generated by the PCS.

Clause 6 describes the relationship between the different classes of IEC 61162-4 applications and gives an overview of their functionality. The annexes contain the detailed PCS definitions for the classes.

The objective of companion standards is to provide definitions of the information that is transferred within an integrated ship control system and of how these information items can be accessed or provided. Furthermore, the standard shall allow the definition of the actual network interfaces which the applications use to connect to the system. The description format is machine-readable, allowing an automatic compilation of the description into interface software.

A companion standard allows the reader to, at will, shift the focus between a technical specification and a definition of interfaces and information items. The development team can determine information attributes like unit, power, accuracy and the structure of the system architecture and create a common interpretation basis for data before the system implementation. The formalisms underlying the specification language will at the same time provide an unambiguous and precise description of the equipment interfaces which allow the use of computer tools to automatically generate interface program codes or to inspect and manipulate interfaces on-line, for example for debugging and monitoring purposes.

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 61162-1:2000, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IEC 61162-2:1998, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high speed transmissiion*

IEC 61162-3, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Multiple talkers and multiple listeners – Serial data instrument network* [1]

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, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 401: Multiple talkers and multiple listeners – Ship systems interconnection – Application profile*

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

3 Definitions

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

3.1 Terms and abbreviations

3.1.1
abstract specification
PCS specifications that are part of the PFS (defined in this standard) are not intended for direct implementation and are termed “abstract”

3.1.2
application interface
a collection of interface components instantiated in an application definition document as one protocol level interface

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[1] To be published.