

INTERNATIONAL STANDARD

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**Maritime navigation and radiocommunication equipment and systems –
Integrated navigation systems –
Part 2: Modular structure for INS – Operational and performance requirements,
methods of testing and required test results**

**Matériels et systèmes de navigation et de radiocommunication maritimes –
Systèmes de navigation intégrés –
Partie 2: Structure modulaire des systèmes de navigation intégrés – Exigences
opérationnelles et de fonctionnement, méthodes d'essai et résultats d'essai
exigés**



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**MARITIME NAVIGATION AND
 RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS –
 INTEGRATED NAVIGATION SYSTEMS –**

**Part 2: Modular structure for INS –
 Operational and performance requirements,
 methods of testing and required test results**

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A list of all parts in the IEC 61924 series, published under the general title *Maritime navigation and radiocommunication equipment and systems – Integrated navigation systems*, can be found on the IEC website.

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MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – INTEGRATED NAVIGATION SYSTEMS –

Part 2: Modular structure for INS – Operational and performance requirements, methods of testing and required test results

1 Scope

This part of IEC 61924 specifies the minimum requirements for the design, manufacture, integration, methods of testing and required test results for an integrated navigation system (INS) to comply with the International Maritime Organization (IMO) requirements of Resolution MSC.252(83). In addition, it takes account of IMO Resolution A.694(17) to which IEC 60945 is associated. When a requirement in this standard is different from IEC 60945, the requirement of this standard takes precedence.

NOTE 1 IEC 61924:2006 specifies the minimum requirements for the design, manufacture, integration, methods of testing and required test results for an integrated navigation system to comply with the earlier IMO requirements of Resolution MSC 86(70), Annex 3. Integrated navigation systems in accordance with IEC 61924:2006 are not suitable for installation after 1 January 2011.

NOTE 2 All text of this standard, whose wording is identical to that in IMO Resolution MSC.252(83) will be printed in *italics* and the Resolution and paragraph number indicated between brackets.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60945:2002, *Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results*

IEC 61162 (all parts), *Maritime navigation and radiocommunication equipment and systems – Digital interfaces*

IEC 61162-1:2010, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

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

IEC 61162-3, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Serial data instrument network*

IEC 61162-450, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 450: Multiple talkers and multiple listeners – Ethernet interconnection*

IEC 61174:2008, *Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operational and performance requirements, methods of testing and required test results*

IEC 62065:2002, *Maritime navigation and radiocommunication equipment and systems – Track control systems – Operational and performance requirements, methods of testing and required test results*

IEC 62288:2008, *Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results*

IEC 62388:2007, *Maritime navigation and radiocommunication equipment and systems – Shipborne radar – Performance requirements, methods of testing and required test results*

IEC 62616:2010, *Maritime navigation and radiocommunication equipment and systems – Bridge navigational watch alarm system (BNWAS)*

IMO A.694(17), *General requirements for shipborne radio equipment forming part of the Global maritime distress and safety system (GMDSS) and for electronic navigational aids*

IMO/ICAO, *International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual) Volume 3*

IMO MSC/Circ.982, *Guidelines on ergonomic criteria for bridge equipment and layout*

IMO MSC.191(79), *Performance standards for presentation of navigation-related information on shipborne navigational displays*

IMO MSC.232(82), *Revised performance standards for Electronic Chart Display and Information Systems (ECDIS)*

IMO MSC.252(83), *Performance Standards for Integrated Navigation Systems (INS)*

IMO MSC.302(87), *Performance standards for Bridge Alert Management (BAM)*

<https://standards.iteh.ai/catalog/standards/iec/2/4/0adae-b519-4cc3-85e1-ed2840eff559/iec-61924-2-2012>

ISO 11674:2006, *Ships and marine technology – Heading control systems*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

accuracy

degree of conformance between the estimated or measured parameter value at a given time and its true parameter value at that time

3.1.2

added value

functionality and information, which are provided by the INS, in addition to the requirements of the performance standard for the individual equipment

3.1.3

aggregated alert

alert indicating the existence of multiple individual alerts of the same kind

3.1.4
aid to navigation
AtoN

any device or system external to a vessel intended to assist a navigator to determine position or safe course, or to warn of hazards to navigation

3.1.5
alarm

the highest priority of an alert as defined in MSC.252(83). Announcing a situation or condition requiring immediate attention, decision and if necessary action by the bridge team, to maintain the safe navigation of the ship

3.1.6
alert

announcing abnormal situations and conditions requiring attention, decision and/or action. Alerts are divided in three priorities: alarms, warnings and cautions

3.1.7
alert announcements

visual and where applicable acoustical presentation of alerts

3.1.8
alert history list

accessible list of past alerts

3.1.9
alert management

concept for the harmonized regulation of the monitoring, handling, distribution and presentation of alerts on the bridge

3.1.10
announcement

visual and/or audible signal issued to the user by the system

3.1.11
automatic control functions

functions that include automatic heading, and/or track and/or speed control or other navigation related automatic control functions

3.1.12
backup

use of data, function and/or hardware of similar type and quality

3.1.13
Category A alerts

alerts where graphical e.g. radar, ECDIS, information at the task station directly assigned to the function generating the alert is necessary, as decision support for the evaluation the alert related condition

3.1.14
Category B alerts

alerts where no additional information for decision support is necessary besides the information which can be presented at the central alert management HMI

**3.1.15
caution**

lowest priority of an alert. Raising bridge team's awareness of a condition which does not warrant an alarm or warning condition, but still requires attention out of the ordinary consideration of the situation or of given information

**3.1.16
collision avoidance**

navigational task of detecting and plotting other ships and objects to avoid collisions

**3.1.17
configuration in use**

sub-systems (e.g. sensors and sources, MFD workstations, automatic control function, etc.) selected for use and tasks (e.g. collision avoidance, route monitoring, etc.) selected operative in each MFD

Note 1 to entry: This is a subset of the available configuration which is a subset of the complete system configuration.

**3.1.18
conning position**

place on the bridge with a commanding view and which is used by navigators when commanding, manoeuvring and controlling a ship

**3.1.19
consistent common reference point
CCRP**

location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge

**3.1.20
consistent common reference system
CCRS**

sub-system or function of an INS for acquisition, processing, storage, surveillance and distribution of data and information providing identical and obligatory reference to sub-systems and subsequent functions within an INS and to other connected equipment, if available

Note 1 to entry: Examples of reference are: coordinate system, time zone, chart datum and depth datum.

**3.1.21
degraded condition**

reduction in system functionality resulting from failure

**3.1.22
detected hazard**

hazard identified by a sensor (for example, radar or echo sounder) or reported by a communication device (for example AIS or NAVTEX) and which is available to the INS

**3.1.23
entry field**

location on a display for the input of data by the operator

Note 1 to entry: The requested information is usually alphanumeric.

**3.1.24
essential functions**

indispensable functions to be available as required for the relevant operational use