International Standard

ISO 16328

Ships and marine technology — Gyro-compasses for high-speed craft

Navires et technologie maritime — Compas gyroscopiques pour navires à grande vitesse

Third edition
2026-11

Reference number
ISO 16328:2026(en)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 6, *Navigation and ship operations*.

This third edition cancels and replaces the second edition (ISO 16328:2014), which has been technically revised.

The main changes are as follows:

— Clause 4 (abbreviated terms) has been added;

— in 6.4, requirements related to bridge alert management have been added;

— in 7.1, a requirement for display equipment has been added;

— in 7.12, a test method for requirements related to bridge alert management has been added;

— Annex C has been replaced with a new Annex on alerts definition, including alert identifiers;

— in Annex D, an IEC 61162 series interfaces overview has been added;

— the normative references and bibliography have been updated.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is aligned with IMO Resolution A.821(19)[4] on performance standards for gyro-compasses for high-speed craft.

Any text in this document which is a citation from the IMO Resolution A.821(19), appears in italics. Within these citations, any changes to the original wording of the IMO Resolution A.821(19) are written in upright font.

In this document, the following verbal forms are used:

— “shall” indicates a requirement;

— “should” indicates a recommendation;

— “may” indicates a permission;

— “can” indicates a possibility or a capability.

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Ships and marine technology — Gyro-compasses for high-speed craft

1 Scope

This document specifies the minimum requirements, construction, performance and type testing for gyro-compasses for high-speed craft, which are required to comply with the International Convention for the Safety of Life at Sea (SOLAS) 1974 (as amended),[4] Chapter X and the performance standards adopted by the IMO Resolution A.821(19).[4]

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

IEC 61162-1, *Marine 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 61162-450, *Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection*

IEC 62288, *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 62923-1, *Maritime navigation and radiocommunication equipment and systems — Bridge alert management — Part 1: Operational and performance requirements, methods of testing and required test results*

IEC 62923-2, *Maritime navigation and radiocommunication equipment and systems — Bridge alert management — Part 2: Alert and cluster identifiers and other additional features*

IMO Resolution A.424 (XI), *Performance standards for gyro-compasses*

IMO Resolution MSC.302(87), *performance standards for bridge alert management*

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

IMO Resolution 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*

3 Terms and definitions

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

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ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
gyro-compass
complete equipment comprising all essential elements of the complete design, including both the gyro-compass as heading sensor and the associated heading transmission system

[SOURCE: IMO Resolution A.821(19),[4] 2.1, modified — "complete equipment comprising all essential elements of the complete design" has been added]

3.2
true heading
horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing through the craft's fore and aft datum line

Note 1 to entry: The true heading is measured from true north (000°) clockwise through 360°.

Note 2 to entry: When the *gyro-compass* (3.1) equipment is tested on the test stand, this "true heading" is regarded as the true heading of the lubber line. Where a gyro-compass has the facility of introducing a correction by moving the lubber line, the correction is set for the local latitude.

[SOURCE: IMO Resolution A.821(19),[4] 2.2, modified — notes 1 and 2 to entry have been added.]

3.3
settled
stable situation when any three readings taken at intervals of 30 min are within a band of 0,7°, with the compass level and stationary

Note 1 to entry: The settling time is the elapsed time between the time of switch-on at the initial heading error and the third recording of the settle.

[SOURCE: IMO Resolution A.821(19),[4] 2.3, modified — note 1 to entry has been added.]

3.4
settle point heading
mean value of ten readings taken at 20 min intervals after the compass has *settled* (3.3)

[SOURCE: IMO Resolution A. 821(19), 2.4]

3.5
settle point error
difference between the *settle point heading* (3.4) and the *true heading* (3.2)

[SOURCE: IMO Resolution A.821(19),[4] 2.5]

3.6
error
difference between the observed value and the *settle point heading* (3.4)

Note 1 to entry: In this document, if the *true heading* (3.2) is unknown —other than in the case of a *settle point error* (3.5) (the difference from the true heading) — quantitative heading error is evaluated using the *settle point heading* (3.4) instead of the true heading defined here.

[SOURCE: IMO Resolution A.821(19),[4] 2.6, modified — note 1 to entry has been added.]

3.7
repeater compass
device that reproduces the master compass card at a remote location

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3.8
bearing repeater compass
device that reproduces the master compass card for the purpose of taking bearings

3.9
compass card
graduated dial of the compass which indicates the measured direction of the meridian

3.10
latitude error
error (3.6) to which some *gyro-compasses* (3.1) are subject, the magnitude and sign of which depend upon the local latitude

Note 1 to entry: Means are provided for correcting this error.

3.11
speed error
error (3.6) to which *gyro-compasses* (3.1) are subject, the magnitude and sign of which depend upon the speed, course, and latitude of the craft

Note 1 to entry: Means are provided for correcting this error.

3.12
lubber line
index line situated on the body of gyro-compass or repeater compass against which the compass card is read

3.13
master compass
main compass unit which supplies the heading information to the repeaters and other navigational aids

3.14
Scorsby table
test machine which enables a platform to oscillate independently about three axes

Note 1 to entry: It is used to simulate the motion of a craft.

3.15
bridge alert management
BAM
overall concept for management, handling and harmonized presentation of alerts on the bridge

[SOURCE: IMO Resolution MSC.302(87), Appendix 1]

3.16
central alert management system
CAM system
combined functionality of the central alert management and the central alert management human machine interface

[SOURCE: IEC 62923-1:2018, 3.18]

4 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

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