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Electrical installations in ships -
Part 504: Automation, control and instrumentation

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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Electrical installations in ships - Part 504: Automation, control and instrumentation

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IEC 60092-504 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) aligned bridge and machinery alert references throughout the document;
b) transfer of EMC items to IEC 60533 throughout the document;
c) update of power management and energy management (9.5 and 9.6).

The text of this International Standard is based on the following documents:

Draft	Report on voting
18/2024/FDIS	18/2034/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60092 series, published under the general title *Electrical installations in ships*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

IEC 60092 forms a series of International Standards for electrical installations in sea-going ships, incorporating good practice and coordinating, as far as possible, existing rules.

These standards form a code of practical interpretation and amplification of the requirements of the International Convention for the Safety of Life at Sea (SOLAS), a guide for future regulations which can be prepared and a statement of practice for use by ship owners, shipbuilders and appropriate organizations.

1 Scope

This part of IEC 60092 specifies requirements for electrical, electronic and programmable equipment supporting essential services intended for automation, control, monitoring, alert, safety and protection systems

This document is not applicable for:

– maritime navigation and radiocommunication equipment and systems making use of electrotechnical, electronic, electroacoustic, electro-optical and data processing techniques.

NOTE It is important that equipment in the scope of IEC TC 80 (Maritime navigation and radiocommunication equipment and systems) complies with IEC 60945 which already covers the requirements stated in this document.

– internal communication systems, except PA/GA (Public Adress/General Alarm).

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 60068-2-1, *Environmental testing - Part 2: Tests - Test A: Cold*

IEC 60068-2-2, *Environmental testing - Part 2: Tests - Test B: Dry heat*

IEC 60068-2-6, *Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)*

IEC 60068-2-30, *Environmental testing - Part 2: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-52*, Environmental testing - Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60079-14:2024, *Explosive atmospheres - Part 14: Electrical installation design, selection and installation of equipment, including initial inspection*

IEC 60092-101:2018, *Electrical installations in ships - Part 101: Definitions and general requirements*

IEC 60092-201:1994, *Electrical installations in ships - Part 201: System design - General*

IEC 60092-202, *Electrical installations in ships - Part 202: System design - Protection*

IEC 60092-302-2, *Electrical installations in ships - Part 302-2: Low voltage switchgear and controlgear assemblies - Marine power*

IEC 60092-353, *Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV*

IEC 60092-376, *Electrical installations in ships - Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)*

IEC 60092-501, *Electrical installations in ships - Part 501: Special features - Electric propulsion plant*

IEC 60331 (all parts), *Tests for electric cables under fire conditions*

IEC 60332-1-2, *Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame*

IEC 60447, *Basic and safety principles for man-machine interface, marking and identification - Actuating principles*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60533, *Electrical and electronic installations in ships - Electromagnetic compatibility (EMC) - Ships with a metallic hull*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61000-4-17, *Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test*

IEC 61000-4-29, *Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests*

IEC 62923-1:2018, *Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 1: Operational and performance requirements, methods of testing and required test results*

IEC 81355-1, *Industrial systems, installations and equipment and industrial products - Classification and designation of information - Part 1: Basic rules and classification of information*

ISO 3740, *Acoustics - Determination of sound power levels of noise sources - Guidelines for the use of basic standards*

EN 54 (all parts), *Fire detection and fire alarm systems*

SOLAS, *International Convention for the Safety of Life at Sea*:1974, consolidated edition, 2024

MSC-FAL.1/Circ.3/Rev.2, *Guidelines on maritime cyber risk management,* 2022

IMO Resolution MSC.302(87) *Adoption of Performance Standards for Bridge Alert Management*

3 Terms and definitions

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

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

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp