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Electrical installations in ships -
Part 501: Special features - Electric propulsion plant

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Electrical installations in ships - Part 501: Special features - Electric propulsion plant

FOREWORD

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IEC 60092-501 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 sixth edition cancels and replaces the fifth edition published in 2013. This edition constitutes a technical revision.

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

a) addition of podded drives including azimuth in the scope;
b) addition of alternative power sources;
c) modification of the special requirements for ships with only one propulsion motor;
d) new definition for test of slip ring units;
e) modification of Figure 2 and description;
f) addition of a description of power management functions;

g) addition of emergency stop at control stations;

h) clearer start blockings;

i) deletion of Table A.2, Table A.3 and Table A.4 in Annex A. Their content has been moved to Table 1.

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

Draft	Report on voting
18/1982/FDIS	18/2001/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– withdrawn, or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

The IEC 60092 series forms a series of international standards for electrical installations in sea-going ships, incorporating good practices and coordinating as far as possible existing rules.

This series forms a code of practical interpretation and amplification of the requirements of the International Convention on Safety of Life at Sea, a guide for future regulations which may be prepared and a statement of practice for use by shipowners, ship builders and appropriate organizations.

1 Scope

This part of IEC 60092 applies to electric propulsion plants and specifies system design, installation and testing for equipment such as:

– generators and their prime movers or other power sources (fuel cell, battery, …);
– switchboards;
– transformers/reactors;
– semiconductor converters;
– propulsion motors;
– excitation systems;
– control, monitoring and safety systems;
– wires, cables, busbars or trunking systems;
– podded drives including azimuth.

Thrusters intended either as auxiliary steering or auxiliary propulsion devices or both and booster equipment are excluded.

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 60034 (all parts), *Rotating electrical machines*

IEC 60034-1:2022, *Rotating electrical machines - Part 1: Rating and performance*

IEC 60068-2-6:2007, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

IEC 60076 (all parts), *Power transformers*

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

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

IEC 60092-301, *Electrical installations in ships - Part 301: Equipment - Generators and motors*

IEC 60092-302-2:2019, *Electrical installations in ships - Part 302-2: Low voltage switchgear and controlgear assemblies - Marine power*[1]

IEC 60092-303, *Electrical installations in ships - Part 303: Equipment - Power transformers and reactors*

IEC 60092-352, *Electrical installations in ships - Part 352: Choice and installation of electrical cables*

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1 Applies in conjunction with IEC 61439-1:2020 and IEC 61439-2:2020.

IEC 60092-401, *Electrical installations in ships - Part 401: Installation and test of completed installation*

IEC 60092-503*, Electrical installations in ships - Part 503: Special features - AC supply systems with voltages in the range of above 1 kV up to and including 36 kV*

IEC 60092-504:2016, *Electrical installations in ships - Part 504: Automation, control and instrumentation*

IEC 60146 (all parts), *Semiconductor converters*

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 61180, *High-voltage test techniques for low-voltage equipment - Definitions, test and procedure requirements, test equipment*

IEC 61378-1, *Converter transformers - Part 1: Transformers for industrial applications*

IEC 61439-1:2020, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules*

IEC 61439-2:2020, *Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies*

IEC 61800 (all parts), *Adjustable speed electrical power drive systems*

IEC 62271-200:2021, *High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52* kV
IEC 62271-200:2021/AMD1:*2024*

IEC 62477 (all parts), *Safety requirements for power electronic converter systems and equipment*

IMO Resolution MSC.137(76):2002, Annex 6, *Standards for Ship Manoeuvrability*

International Convention for the Safety of Life at Sea (SOLAS):1974, Consolidated edition 2014