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Electrical installations in ships - Part 507 - Small vessels

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/15

Obsahuje: EN 60092-507:2015, IEC 60092-507:2014

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English Version

Electrical installations in ships - Part 507 - Small vessels (IEC 60092-507:2014)

Installations électriques à bord des navires - Partie 507: Petits navires (IEC 60092-507:2014)

Elektrische Anlagen auf Schiffen - Teil 507: Kleine Wasserfahrzeuge (IEC 60092-507:2014)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 18/1426/FDIS, future edition 3 of IEC 60092-507, prepared by IEC/TC 18 "Electrical installations of ships and of mobile and fixed offshore units" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60092-507:2015.

The following dates are fixed:

– latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-09-30
– latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-12-30

This document supersedes EN 60092-507:2000.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60092-507:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

ISO 10133	NOTE	Harmonised as	EN ISO 10133 (not modified).
ISO 10240	NOTE	Harmonised as	EN ISO 10240 (not modified).
ISO 13297	NOTE	Harmonised as	EN ISO 13297 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60034	series	Rotating electrical machines	EN 60034	series
IEC 60079	series	Explosive atmospheres	EN 60079	series
IEC 60092-101	1994	Electrical installations in ships - Part 101: Definitions and general requirements	-	-
IEC 60092-202	1994	Electrical installations in ships - Part 202: System design - Protection	-	-
IEC 60092-301	1980	Electrical installations in ships - Part 301: Equipment - Generators and motors	-	-
IEC 60092-302	-	Electrical installations in ships - Part 302: Low-voltage switchgear and controlgear assemblies	-	-
IEC 60092-303	-	Electrical installations in ships - Part 303: Equipment - Transformers for power and lighting	-	-
IEC 60092-304	-	Electrical installations in ships. Part 304: Equipment - Semiconductor convertors	-	-
IEC 60092-306	-	Electrical installations in ships - Part 306: Equipment - Luminaires and accessories	-	-
IEC 60092-307	-	Electrical installations in ships - Part 307: Equipment - Heating and cooking appliances	-	-
IEC 60092-350	-	Electrical installations in ships - Part 350: Shipboard power cables - General construction and test requirements	-	-
IEC 60092-352	-	Electrical installations in ships - Part 352: Choice and installation of electrical cables	-	-
IEC 60092-401	1980	Electrical installations in ships.- Part 401: Installation and test of completed installation	-	-
IEC 60092-501	2013	Electrical installations in ships - Part 501: Special features - Electric propulsion plant	-	-
IEC 60146	series	General requirements and line commutated convertors	EN 60146	series
IEC 60245-4	-	Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables	-	-

IEC 60309-1	-	Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements	EN 60309-1	-
IEC 60309-2	-	Plugs, socket-outlets and couplers for industrial purposes - Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories	EN 60309-2	-
IEC 60332-1	series	Tests on electric cables under fire conditions; Part 1: test on a single vertical insulated wire or cable	EN 60332-1	series
IEC 60332-3-22	-	Tests on electric and optical fibre cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A	-	-
IEC 60364-7-709	-	Low-voltage electrical installations - Part 7-709: Requirements for special installations or locations - Marinas and similar locations	HD 60364-7-709	-
IEC 60445	2010	Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors	EN 60445	2010
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60533	-	Electrical and electronic installations in ships - Electromagnetic compatibility	-	-
IEC 60898-1	-	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Part 1: Circuit-breakers for a.c. operation	EN 60898-1	-
IEC 60945	-	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results	EN 60945	-
IEC 60947-2	-	Low voltage switchgear and controlgear – Part 2: Circuit-breakers	EN 60947-2	-
IEC 60947-7-1	-	Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	-
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	-
IEC 61558	series	Safety of power transformers, power supplies, reactors and similar products	EN 61558	series
IEC 61558-2-4	2009	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V - Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers	EN 61558-2-4	2009
ISO 8846	-	Small craft - Electrical devices - Protection against ignition of surrounding flammable gases	EN 28846:1993/A1	-
ISO 9094-1	-	Small craft - Fire protection - Part 1: Craft with a hull length of up to and including 15 m	EN ISO 9094-1	-
ISO 9094-2	-	Small craft - Fire protection - Part 2: Craft with a hull length of over 15 m	EN ISO 9094-2	-

ISO 10239	-	Small craft - Liquefied petroleum gas (LPG) systems	EN ISO 10239	-
IMO 904E	-	Convention on the International Regulations for Preventing Collisions at Sea, International Maritime Organization (COLREG)	-	-
SOLAS	1974	International Convention for the Safety of Life at Sea	-	-

IEC 60092-507

Edition 3.0 2014-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electrical installations in ships – Part 507: Small vessels

Installations électriques à bord des navires – Partie 507: Petits navires

IEC 60092-507:2014-11(en-fr)

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NORME INTERNATIONALE

Electrical installations in ships – Part 507: Small vessels

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CONTENTS

FOREWORD 7
INTRODUCTION 9
1 Scope 10
1.1 General 10
1.2 Electrical systems 10
2 Normative references 11
3 Terms and definitions 13
3.1 General terms 13
3.2 Terms and definitions related to DC systems of distribution 14
3.3 Terms and definitions related to AC systems of distribution 14
3.4 Terms and definitions related to protection 15
3.5 Terms and definitions related to equipment 16
3.6 Terms and definitions related to batteries 18
3.7 Terms and definitions related to galvanic isolation from shore supplies 19
4 General requirements 19
4.1 Ratings 19
4.2 Ambient air and cooling water temperature 19
4.3 Inclination of vessel 20
4.4 Voltage and frequency variations 20
4.4.1 General 20
4.4.2 DC systems 20
4.4.3 AC systems 21
4.5 Electrical power sources 21
4.5.1 General 21
4.5.2 DC systems supplied from batteries 22
4.5.3 DC generator 22
4.5.4 AC systems 23
4.5.5 AC generator 23
4.5.6 Measuring instruments 24
4.5.7 Emergency source of electrical power 24
4.6 Equipment 25
4.6.1 Transformers 25
4.6.2 Converters 25
4.6.3 Motors 25
4.7 Electrical equipment and enclosures 25
4.7.1 General requirements 25
4.7.2 General degree of protection of equipment and enclosures 25
4.7.3 Protection from dripping water 26
4.7.4 Cable entry 26
4.7.5 Identification 26
4.7.6 Segregation of DC and AC systems 27
4.7.7 Electromagnetic compatibility 27
4.7.8 Busbars 27
4.7.9 Switches and controls 27
4.7.10 Final circuits 27
4.8 Plugs and socket-outlets 28

4.8.1 AC system 28
4.8.2 DC systems 28
4.8.3 Installation in special locations 28
4.9 Battery installation 28
4.9.1 General arrangements 28
4.9.2 Isolation of battery banks 28
4.9.3 Operational switching of battery banks 29
4.9.4 Permanently energised circuits 29
4.9.5 Ventilation 29
4.10 Electrical apparatus for explosive gas atmospheres 30
4.11 Battery chargers 30
4.11.1 Protection against overcharging and reversal of charging current 30
4.11.2 Wind generator and photovoltaic devices 31
4.12 Electric propulsion systems 31
4.12.1 General 31
4.12.2 Component parts of electric propulsion systems suitable for small vessels. 31
4.12.3 Operator controls, instruments, system and trip alarms 33
4.13 Electrical fittings and cables attached to structures of another metal 34
4.14 Internal communication circuits 34
4.15 Navigation lights supply 34
4.16 Luminaires 34
4.17 Electrical heating and cooking appliances 35
4.18 Magnetic compasses 35
5 Distribution systems 35
5.1 DC distribution systems 35
5.2 Standard AC distribution systems 35
5.2.1 Types of AC distribution system 35
5.2.2 Earthing the neutral conductor in type TN AC systems 35
5.2.3 Earthing of non-current-carrying parts 36
5.2.4 Protective conductor in AC systems 36
5.3 Earth bonding conductors 36
5.4 Balance of loads in three-phase AC systems 36
5.5 Shore connection arrangements 37
5.5.1 General 37
5.5.2 Vessel connections 37
5.5.3 Information and connection instructions 37
5.5.4 Galvanic isolation provided by an isolation transformer 37
5.5.5 Galvanic isolation provided by a diode type galvanic isolator 38
6 Protection against electric shock in AC and DC systems with voltage exceeding safety voltage 39
6.1 Protection against direct contact 39
6.2 Automatic disconnection of supply to final circuit or equipment 39
6.3 Earthed neutral AC system (TN system) 39
6.4 Non-neutral earthed AC system (IT-type system) 39
6.5 Use of class II equipment 40
7 Protection against over-current and fault-current in AC and DC systems 40
7.1 General 40
7.2 Characteristics of protective devices 40

7.3 DC battery source 40
7.3.1 Overcurrent protection of main circuit from batteries 40
7.3.2 Batteries without output overcurrent protection 41
7.4 AC system 41
7.4.1 Protective devices 41
7.4.2 Final circuits 41
7.5 Generators 42
7.5.1 Small generators in DC systems 42
7.5.2 Use of fuses 42
7.5.3 Generator circuit-breaker 42
7.6 Transformers 42
7.7 Motor protection 42
7.8 Electronic power converters 42
8 Diversity (demand) factor 42
8.1 Circuits other than final circuits 42
8.2 Application of diversity (demand) factors 43
8.3 Final circuits 43
8.4 Motor power circuits 43
9 Cables 43
9.1 Selection of cables 43
9.1.1 Cables for DC systems 43
9.1.2 Cables for AC systems 43
9.1.3 Conductors 43
9.1.4 Protective coverings 43
9.2 Determination of the cross-sectional areas of conductors 44
9.2.1 General requirement 44
9.2.2 DC system 44
9.2.3 AC system 44
9.2.4 Protective conductor in AC systems 44
9.2.5 Current ratings for continuous service (AC and DC) 45
9.2.6 Correction factors for different ambient air temperatures 46
9.2.7 Correction factors for cable bunching 47
9.2.8 Correction factors for non-continuous service 47
9.2.9 Parallel connection of cables 47
10 Cable installation, conductor terminations and identification 48
10.1 Cable routes 48
10.2 Cable support and protection 48
10.3 Segregation of circuits 48
10.4 DC and AC cabling segregation 49
10.5 Instrument, control, navigation aids, data, and communications cables 49
10.6 Conductor terminations 50
10.7 Conductor identification 50
10.7.1 General 50
10.7.2 Bonding conductors 51
10.7.3 Conductor insulation colours in DC systems 51
11 Earthing 51
11.1 Earthing arrangements on small vessels with non-metallic hull 51
11.2 Earthing arrangements on small vessels with metallic hull 51

11.3 Earthing plate for the main earth connection in a small vessel with non-metallic hull 51
11.4 Insulation from earth of control systems for internal combustion engine on metallic hulled vessels 51
11.5 Earthing of electrical equipment enclosures 52
12 Lightning protection 52
12.1 Lightning protection conductors 52
12.2 Installation 52
12.3 Earthing of lightning conductors 52
13 Testing 52
13.1 General 52
13.2 Earthing 53
13.3 Insulation resistance 53
13.3.1 General 53
13.3.2 Switchboards, panel boards and distribution boards 53
13.3.3 Lighting and power circuits 53
13.3.4 Generators and motors 53
13.3.5 Transformers 53
13.4 Switchgear and controlgear 54
13.5 Voltage drop 54
13.6 Internal communication circuits 54
13.7 Lighting, heating and galley equipment 54
14 Vessels over 24 m in length up to 50 m/500 GT 54
14.1 General 54
14.2 Essential services 54
14.3 Capacity of the batteries 54
14.4 Segregation of supplies for essential circuits 55
14.5 SOLAS battery charger protection 55
14.6 Protection against over current and fault current – safety equipment 55
14.7 Earth faults in essential circuits 55
14.7.1 Earthed neutral systems (TN-type systems) 55
14.7.2 Non-earthed system (IT-type system) 55
14.8 Navigation light supply 55
14.9 Radio and navigation equipment 55
14.10 Navigation, control, instrumentation and communication systems 56
14.11 Electric and electrohydraulic steering gear 56
Annex A (informative) Shore-side power supply arrangements 57
A.1 Connection to a shore power supply 57
A.1.1 General 57
A.1.2 Instructions included in a vessel owner's manual (ISO 10240) 57
A.1.3 Information and instructions for connecting an electrical shore supply to a vessel 57
A.2 Examples of general arrangements for an electrical supply to a vessel 58
A.2.1 Direct connection to a single phase mains supply 58
A.2.2 Direct connection to a single phase mains supply with an isolating transformer on the vessel 59
A.2.3 Direct connection to a three phase mains supply 59
A.2.4 Direct connection to a three phase mains supply with an isolating transformer on the vessel 60

A.2.5 Connection to a single phase supply through a shore-mounted isolating transformer 61
A.2.6 Direct connection to a single phase mains supply with a diode type galvanic isolator in the PE circuit to shore. 61
A.2.7 Direct connection to a three phase mains supply with a diode type galvanic isolator in the PE circuit to shore. 62
Annex B (informative) Diode type galvanic isolator 63
B.1 General 63
B.2 Testing 64
Annex ZZ (informative) Relationship between this standard and the essential requirements of EU directive 94/25/EC as amended by directive 2003/44/EC 65
Bibliography 66

Figure 1 – Diagram showing the use of shore power supply accessories 18
Figure A.1 – Direct connection to a single phase mains supply 59
Figure A.2 – Direct connection to a single phase mains supply with an isolating transformer on the vessel 59
Figure A.3 – Direct connection to a three phase mains supply 60
Figure A.4 – Direct connection to a three phase mains supply with an isolating transformer on the vessel 60
Figure A.5 – Connection to a single phase supply through a shore-mounted isolating transformer 61
Figure A.6 – Direct connection to a single phase mains supply with a diode type galvanic isolator in the protective earth circuit to shore 62
Figure A.7 – Direct connection to a three phase mains supply with a diode type galvanic isolator in the protective earth circuit to shore 62

Table 1 – Design parameters – Temperature 20
Table 2 – Angular deviation and motion 20
Table 3 – AC voltages and frequencies for vessel's service systems of supply 21
Table 4 – Required technical data for owner’s manual 22
Table 5 – Degree of protection in accordance with IEC 60529 26
Table 6 – Minimum clearances and creepage distances for bare busbars 27
Table 7 – Reference currents for calculation of minimum ventilation 30
Table 8 – Table of main component parts of an electric propulsion system and associated clauses and sections in this standard 32
Table 9 – Recommended maximum breaking times for protective devices 41
Table 10 – Values of α used in the calculation of current ratings 45
Table 11 – Recommended current ratings for single core cables in continuous service (ambient temperature 45 °C) 46
Table 12 – Correction factors for various ambient air temperatures 47
Table 13 – Correction factors for half-hour and one-hour service 47
Table ZZ.1 – Correspondence between this standard and directive 94/25/EC as amended by directive 2003/44/EC 65

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICAL INSTALLATIONS IN SHIPS –

Part 507: Small vessels

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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International Standard IEC 60092-507 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

This third edition cancels and replaces the second edition published in 2008 and constitutes a technical revision.

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

a) The standard now clarifies its application for electrical installations in those recreational craft which require to conform to the Recreational Craft Directive.
b) The standard specifies requirements for methods of galvanic isolation for small vessels and recreational craft connecting to a low voltage AC shore supply.
c) The standard includes design guidance for electric propulsion systems suitable for small vessels and associated installation requirements.

The text of this standard is based on the following documents:

FDIS	Report on voting
18/1426/FDIS	18/1443/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 2.

A list of all the parts of 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 publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This International Standard incorporates and coordinates, as far as possible, the existing requirements for electrical installations relevant to small vessels as published in other parts of the IEC 60092 series and the IEC 60364 series.

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 507: Small vessels

1 Scope

1.1 General

This part of IEC 60092 specifies requirements for the design, construction and installation of electrical systems in small vessels, which have a length of up to 50 m, or which have a gross tonnage not exceeding 500 Gross Tonnes (GT), designed for use on inland waters or at sea. It is not intended to apply to:

a) small craft equipped only with a battery supplying circuits for engine starting and navigation lighting recharged from an inboard or outboard engine driven alternator.

b) recreational craft of less than 24 m hull length requiring to conform to the Recreational Craft Directive 94/25/EC Annex 1 Essential Requirements Part 5.3 Electrical systems, except for three-phase alternating current installations in such recreational craft which operate at a nominal voltage not exceeding AC 500 V.

1.2 Electrical systems

This standard applies to the types of DC and AC electrical systems described below, individually or in combination.

a) Direct current system which operates at a nominal voltage not exceeding DC 50 V. For many small vessels, this will be the main electrical system supported by batteries for engine starting, navigation lights, navigational aids and communications equipment, lighting and other DC power consumer or converter equipment.

b) Single-phase alternating current system which operates at a nominal voltage not exceeding AC 250 V. Such a system may be the principal electrical power system of a vessel or a system which may only be energized when connected to a shore supply. AC extra-low voltage, safety extra-low voltage, and other circuits may also comprise part of a single-phase AC system. A vessel may also be equipped with DC system(s) for equipment supplied from batteries as in 1.2 a) above.

c) Three-phase alternating current system which operates at a nominal voltage not exceeding AC 500 V. The three-phase system is likely to be the principal electrical power system of a vessel's electrical installation. Such a vessel may also be equipped with single-phase AC circuits(s) similar to 1.2 b) above and DC system(s) for equipment supplied from batteries as in 1.2 a) above.

NOTE 1 Concerning recreational craft of less than 24 m hull length referenced in 1.1 b) above, the following standards apply:

– for direct current installations which operate at a nominal voltage not exceeding DC 50 V: ISO 10133;

– for single-phase alternating current installations which operate at a nominal voltage not exceeding AC 250 V single phase: ISO 13297.

NOTE 2 For alternating current systems having voltages exceeding AC 250 V single-phase or AC 500 V three-phase, for direct current systems exceeding DC 50 V, and for vessels larger than 500 GT or with a length greater than 50 m, other standards within the IEC 60092 series apply.

NOTE 3 Attention is drawn to regulations which govern specific requirements for navigation lights for small vessels.

NOTE 4 Attention is drawn to the fact that, in some countries the EC Directives covering EMC (89/336/EEC), low voltage (73/23/EEC) and general product safety (92/59/EEC) may be applied. In addition, Council Directive 97/70 applies to fishing vessels of 24 m in length and over, and Council Directive 98/18/EC applies to passenger ships. For high speed crafts, attention is drawn to the International code of safety for high-speed craft (HSC Code).

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 60034 (all parts), *Rotating electrical machines*

IEC 60079 (all parts), *Explosive atmospheres*

IEC 60092-101:1994, *Electrical installations in ships – Part 101: Definitions and general requirements*

IEC 60092-202:1994, *Electrical installations in ships – Part 202: System design – Protection* IEC 60092-202:1994/AMD 1:1996

IEC 60092-301:1980, *Electrical installations in ships – Part 301: Equipment – Generators and motors*

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

IEC 60092-303, *Electrical installations in ships – Part 303: Equipment – Transformers for power and lighting*

IEC 60092-304, *Electrical installations in ships – Part 304: Semiconductor convertors*

IEC 60092-306, *Electrical installations in ships – Part 306: Equipment – Luminaires and accessories*

IEC 60092-307, *Electrical installations in ships – Part 307: Equipment – Heating and cooking appliances*

IEC 60092-350, *Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications*

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

IEC 60092-401:1980, *Electrical installations in ships – Part 401: Installation and test of completed installation*

IEC 60092-501:2013, *Electrical installations in ships – Part 501: Special features – Electric propulsion plant*

IEC 60146 (all parts), *Semiconductor convertors*

IEC 60245-4, *Rubber insulated cables-rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

IEC 60309-1, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements*

IEC 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60332-1 (all parts), *Tests on electric and optical fibre cables under fire conditions – Part 1: Test for vertical flame propagation for a single insulated wire or cable*

IEC 60332-3-22, *Tests on electric cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A*

IEC 60364-7-709, *Low-voltage electrical installations – Part 7-709: Requirements for special installations or locations – Marinas and similar locations*

IEC 60445:2010, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors*

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

IEC 60533, *Electrical and electronic installations in ships – Electromagnetic compatibility*

IEC 60898-1, *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation*

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

IEC 60947-7-1, *Low-voltage switchgear and controlgear – Part 7-1: Ancillary equipment – Terminal blocks for copper conductors*

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