

Electrical installation in ships —

Part 302: Low-voltage switchgear and controlgear assemblies

ICS 47.020.60

National foreword

This British Standard reproduces verbatim IEC 60092-302:1997 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee JPEL/18, Electrical installations of ships and mobile and fixed offshore units, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Installations électriques à bord des navires –

**Partie 302:
Ensembles d'appareillage à basse tension**

Electrical installations in ships –

**Part 302:
Low-voltage switchgear and controlgear
assemblies**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 302: Low-voltage switchgear and controlgear assemblies

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60092-302 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

This fourth edition cancels and replaces the third edition published in 1980, amendment 1 (1989) and amendment 2 (1994).

This International Standard shall be read in conjunction with IEC 60439-1.

The clause numbers of this part of IEC 60092 correspond to those of IEC 60439-1. When this standard specifies “addition” or “replacement”, the corresponding text of IEC 60439-1 shall be adapted in consequence. The absence of text in this part of IEC 60092 indicates that the appropriate clauses of IEC 60439-1 apply.

Subclauses, figures and tables which are additional to those of IEC 60439-1 are numbered starting from 101. Additional annexes are lettered AA, BB, etc.

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

FDIS	Report on voting
18/798/FDIS	18/817/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.

Annex AA is for information only.

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, a guide for future regulations which may be prepared and a statement of practice for use by shipowners, shipbuilders and appropriate organizations.

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 302: Low-voltage switchgear and controlgear assemblies

1 General**1.1 Scope***Replacement*

This part of IEC 60092 is applicable to low-voltage switchgear and controlgear assemblies [type-tested assemblies (TTA), partially type-tested assemblies (PTTA) and non type-tested assemblies (NTTA)], with rated voltages not exceeding 1 000 V a.c. at rated frequencies not exceeding 60 Hz or 1 500 V d.c. for use in ships as a supplement to IEC 60439-1.

NOTE – Throughout this standard, the word ASSEMBLY is used for a low-voltage switchgear and controlgear assembly.

This standard also applies to ASSEMBLIES incorporating control and/or power equipment, which operate at higher frequencies. In this case, appropriate additional requirements apply.

Unless otherwise specified in the following clauses, all ASSEMBLIES and their components comply with IEC 60439-1. In case of doubt, IEC 60092 publications shall have preference over IEC 60439-1.

1.2 Normative references*Addition*

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 60092-504: 1994, *Electrical installations in ships – Part 504: Special features – Control and instrumentation*

IEC 60185: 1987, *Current transformers*

IEC 60363: 1972, *Short-circuit current evaluation with special regard to rated short-circuit capacity of circuit-breakers in installations in ships*

IEC 60865-1: 1993, *Short-circuit currents – Calculation of effects – Part 1: Definitions and calculation methods*

2 Definitions

2.1 General

Addition

For the purpose of this part of IEC 60092, the general terms given in IEC 60050(441) and IEC 60439-1, as well as the following definitions apply.

2.1.1 low-voltage switchgear and controlgear assembly (ASSEMBLY): A combination of one or more low-voltage switching devices together with associated control, measuring, signalling, protective, regulating equipment, etc., completely assembled under the responsibility of the manufacturer with all the internal electrical and mechanical interconnections and structural parts.

2.1.1.1 type-tested low-voltage switchgear and controlgear assembly (TTA): A low-voltage switchgear and controlgear assembly conforming to an established type or system without deviations likely to significantly influence the performance from the typical ASSEMBLY verified to be in accordance with this standard.

2.1.1.2 partially type-tested low-voltage switchgear and controlgear assembly (PTTA): A low-voltage switchgear and controlgear assembly, containing both type-tested and non type-tested arrangements provided that the latter are derived (e.g. by calculation) from type-tested arrangements which have complied with the relevant tests.

2.1.1.101 non type-tested low-voltage switchgear and controlgear assembly (NTTA): A low-voltage switchgear and controlgear assembly, which does not belong to 2.1.1.1 or 2.1.1.2.

2.1.101 main switchboard: A switchgear and controlgear assembly which is directly supplied by the main source of electrical power and is intended to distribute and control electrical energy to the ship's services.

2.1.102 emergency switchboard: A switchgear and controlgear assembly which is normally supplied by the main switchboard but in the event of failure of the main electrical power supply system is directly supplied by the emergency source of electrical power or the transitional source of emergency power and is intended to distribute and control electrical energy to the emergency services.

2.1.103 section board: A switchgear and controlgear assembly for controlling and distributing the supply of electrical power to other section boards, distribution boards or final sub-circuits.

2.1.104 distribution board: A switchgear and controlgear assembly for the control and distribution of electrical power to final sub-circuits.

5 Information to be given regarding the ASSEMBLY

In addition to the information required by clause 5 of IEC 60439-1 the following subclauses shall apply:

5.1 Nameplates

Replacement

- c) IEC 60092-302.

5.2 Markings

5.2.101 Circuits

Individual circuits and their devices shall have durable and permanent markings. The rating of fuses and setting of protective devices shall be indicated. When, for fuses above 500 V, the fuseholders permit the insertion of fuses for lower nominal voltage, special warning labels or symbols shall be provided, for example "Caution 690 V fuses only".

5.2.102 Markings of voltage

All ASSEMBLIES shall be marked with the rated operational voltage.

5.2.103 Markings of parts

Withdrawable and removable parts of an ASSEMBLY shall have markings to identify where the parts can be placed in the ASSEMBLY.

5.3 Instructions for installation, operation and maintenance

Addition

Where polarized circuit-breakers are installed in d.c. systems and in all other similar cases warning labels shall be arranged so as to guard against the possibility of incorrect connections during maintenance or replacement.

6 Service conditions

6.101 Environmental conditions

The normal environmental conditions shall be as stated in 2.6 of IEC 60092-101 and in 3.2 of IEC 60092-504. Other environmental conditions shall be agreed between the manufacturer and the user if required, e.g. for use in arctic or tropical climate.

The conditions specified in the above-mentioned IEC 60092 publications shall have preference over values given in 6.1 to 6.3.1 of IEC 60439-1.

7 Design and construction

7.1 Mechanical design

7.1.2 Clearances, creepage distances and isolating distances

7.1.2.1 Clearances and creepage distances

Addition

Clearance and creepage distances shall be in accordance with 7.1.2.101 for type-tested and partially type-tested ASSEMBLIES. For non type-tested ASSEMBLIES, clearance and creepage distances shall be in accordance with table 101. The clearances and creepage distances between busbars and/or connectors other than cables in ASSEMBLIES shall not be permanently reduced below the values specified in 7.1.2.101 or 7.1.2.102 due to abnormal conditions (e.g. short circuits).