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Interested committees:

Title: BS IEC 60092-501 Electrical installations in ships
Part 501: Special features - Electric propulsion plant

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



18/1864/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:
IEC 60092-501 ED6

DATE OF CIRCULATION:
2023-10-06

CLOSING DATE FOR COMMENTS:
2023-12-29

SUPERSEDES DOCUMENTS:
18/1807/CD, 18/1813B/CC

IEC TC 18 : ELECTRICAL INSTALLATIONS OF SHIPS AND OF MOBILE AND FIXED OFFSHORE UNITS	
SECRETARIAT: Norway	SECRETARY: Mr Arild Røed
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 2,SC 18A,TC 22,TC 65,TC 80	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.
FUNCTIONS CONCERNED: ☒ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	

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TITLE:

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

NOTE FROM TC/SC OFFICERS:

Due to the amount of comments to the first CD, as second CD is circulated.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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) Podded drives including azimuth added in the scope
- b) Alternative power sources added;
- c) Special requirements for ships with only one propulsion motor changed;
- d) New definition for test of slip ring units;
- e) Changed Figure 2 and changed description;

- f) Description of power management functions added;
- g) Emergency stop added at control stations;
- h) Clearer start blockings;
- i) In Annex A Table 2, 3 and 4 are deleted. The content is moved to Table 1.

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/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.

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

The National Committees are requested to note that for this document the stability date is 2024.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

212

INTRODUCTION

213 IEC 60092 (all parts) forms a series of international standards for electrical installations in sea-
214 going ships, incorporating good practice and co-ordinating as far as possible existing rules.

215 These standards form a code of practical interpretation and amplification of the requirements
216 of the International Convention on Safety of Life at Sea, a guide for future regulations which
217 may be prepared and a statement of practice for use by shipowners, ship builders and
218 appropriate organizations.

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 501: Special features – Electric propulsion plant

1 Scope

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

- generators and their prime movers or alternative 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 as auxiliary steering and / or auxiliary propulsion devices 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 60068-2-6:2007, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

IEC 60076 (all parts), *Power transformers*

IEC 60092-101, *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, *Electrical installations in ships - Part 302-2: Low voltage switchgear and controlgear assemblies - Marine power / Applies in conjunction with IEC 61439-1 (2011-08), IEC 61439-2 (2011-08)*

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

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

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 *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)*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61180-1 *High-voltage test techniques for low-voltage equipment, Part 1: Definitions, test and procedure requirements*

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

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

IEC 61439-2 *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 *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 62477 (all parts) *Safety requirements for power electronic converter systems and equipment*

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

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

alarm

high-priority alert: condition requiring immediate attention and action by the crew, to maintain the safe navigation and safe operation of the ship

291 [SOURCE MSC.302(87), modified 'bridge team' is replaced by 'crew']

292 **3.2**

293 **appropriate authority**

294 governmental body and/or classification society with whose rules the installation is required to
295 comply

296 [SOURCE: IEC 60092-101:2018-10, 3.1, modified.]

297 **3.3**

298 **azimuth drive**

299 system which rotates the propulsion unit around its vertical axis

300 **3.4**

301 **booster equipment**

302 devices that are not needed for propulsion but are installed in order to increase power or
303 efficiency.

304 **3.5**

305 **dead ship condition**

306 condition where the entire machinery installation, including the power supply, is out of
307 operation and where auxiliary services such as compressed air, starting current from batteries
308 etc., for bringing the main propulsion into operation and for the restoration of the main power
309 supply, are not available.

310 [SOURCE IEC 60092-201]

311 **3.6**

312 **double sensor**

313 two sensor elements in one housing

314 **3.7**

315 **local control station**

316 place of control which creates a reference value for the controlled system independent of the
317 remote-control system and any external limitations

318 **3.8**

319 **main control station**

320 place of control of the main propulsion system which is manned under seagoing conditions

321 **3.9**

322 **motor supply lines**

323 cables and/or busbars used to supply electrical power to the propulsion motor(s)

324 **3.10**

325 **inaccessible spaces**

326 spaces that are not accessible during operation without dry docking.

327 **3.11**

328 **nominated body**

329 installer or manufacturer that has been given direct responsibility for the complete propulsion
330 system

331 **3.12**

332 **single failure criterion**

333 In the context of this standard: Criterion (or requirement) applied to the ship's electrical
334 propulsion system such that the ship is capable of maintaining manoeuvrability in the presence
335 of any single technical failure.

336 [SOURCE: IEC 60050-393:2003, 395-07-90, modified — The phrase “it is able to perform its
337 safety task” has been replaced with “it maintains manoeuvrability”]

338 **3.13**

339 **podded drive**

340 propulsion system in which the motor is in a dedicated, submerged unit (pod housing)

341 **3.14**

342 **power management system**

343 **PMS**

344 automatic control system for the generation and distribution of electrical energy.

345 **3.15**

346 **Power source:**

347 generators and their prime movers and/or other power sources such as fuel cell, battery, etc.

348 **3.16**

349 **Prime mover**

350 Device that converts energy into useful mechanical energy to drive a generator

351 [SOURCE: IEV 417-02-05 modified]

352 **3.17**

353 **propulsion control system**

354 system consisting of operation, dynamic control, interlocks, protection and safety of the
355 propulsion system.

356 **3.18**

357 **propulsion generator**

358 generator used for power supply of the propulsion system

359 **3.19**

360 **propulsion motor**

361 electrical motor intended to provide propulsion power

362 **3.20**

363 **propulsion network**

364 the electrical network that the propulsion is connected to.

365 Note 1 to entry: This can be a subsystem dedicated to propulsion, or the general supply system. In this sense, it
366 comprises all the network that is influenced by the propulsion system by electrical interference.

367 **3.21**

368 **propulsion switchboard**

369 switchboard used for power distribution to the propulsion systems

370 **3.22**

371 **redundant sensor**

372 two single sensors in separate housings

373 **3.23**

374 **remote control system**

375 system which comprises all equipment necessary to operate units from a control position where
376 the operator cannot directly observe the effect of their actions