

INTERNATIONAL STANDARD

IEC
61892-5

First edition
2000-08

Mobile and fixed offshore units – Electrical installations –

Part 5: Mobile units

*Unités mobiles et fixes en mer –
Installations électriques –*

*Partie 5:
Unités mobiles*

IEC 61892-5:2000

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* See web site address on title page.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MOBILE AND FIXED OFFSHORE UNITS –
ELECTRICAL INSTALLATIONS –****Part 5: Mobile units****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 61892-5 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

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

FDIS	Report on voting
18/885/FDIS	18/886/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.

Upon authorization by national maritime administrations, classification societies carry out statutory work on their behalf. Relevant rules of a classification society need to be approved by the national maritime administration, and may differ worldwide.

The requirements specified in this International Standard are based on the Code for the Construction and Equipment of Mobile Offshore Drilling Units (1989 MODU CODE) published by the International Maritime Organization (IMO), and might include additional provisions.

This part of IEC 61892 supersedes IEC publication 60092-505, third edition (1984) and its amendment 1 (1993).

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

A bilingual version of this standard may be issued at a later date.

IEC 61892 consists of the following parts, under the general title: *Mobile and fixed offshore units – Electrical installations*:

Part 1: General requirements and conditions

Part 2: System design

Part 3: Equipment

Part 4: Cables

Part 5: Mobile units

Part 6: Installation

Part 7: Hazardous areas

The committee has decided that the contents of this publication will remain unchanged until 2005-12. At this date, the publication will be:

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- withdrawn;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

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INTRODUCTION

IEC 61892 forms a series of International Standards intended to ensure safety in the design, selection, installation, maintenance and use of electrical equipment for the generation, storage, distribution and utilization of electrical energy for all purposes in offshore units used for exploration or exploitation of petroleum resources.

This standard is based on equipment and practices which are in current use, but it is not intended in any way to impede development of new or improved techniques.

The ultimate aim has been to produce a set of International Standards exclusively for the offshore petroleum industry.

In this part of IEC 61892, reference is made to other parts of the standard, which are still in preparation. Footnotes are attached to such references. A footnote indicates which current standard should be used until the part in preparation is published.

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MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 5: Mobile units

1 Scope

This part of IEC 61892 specifies the characteristics for electrical installations in floating units, for use during transfer from one location to another and for use during the exploration and exploitation of petroleum resources.

NOTE Attention is drawn to further requirements concerning electrical installations on such mobile offshore units contained in the MODU CODE of the International Maritime Organization (IMO).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61892. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61892 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60034-1:1996, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-6:1991, *Rotating electrical machines – Part 6: Methods of cooling (IC Code)*

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

IEC 60092-401:1980, *Electrical installations in ships – Part 401: Installation and test of completed installation*
Amendment 1 (1987)
Amendment 2 (1997)

IEC 60332-1:1993, *Tests on electric cables under fire conditions – Part 1: Test on a single vertical insulated wire or cable*

IEC 61892-3:1999, *Mobile and fixed offshore units – Electrical installations – Part 3: Equipment*

IEC 61892-6:1999, *Mobile and fixed offshore units – Electrical installations – Part 6: Installation*

IMO Guidelines for vessels with dynamic positioning systems – see IMO/Circ. 645, Annex, International Maritime Organization

IMO 904E, *Convention on the International Regulations for Preventing Collisions at Sea*, International Maritime Organization

3 Definitions

For the purposes of this part of IEC 61892, the following definitions apply.

3.1

auxiliary steering gear

equipment, other than any part of the main steering gear, necessary to steer the unit in the event of failure of the main steering gear but not including the tiller, quadrant or components serving the same purpose

3.2

dynamic positioning (DP) system

equipment necessary to provide means of controlling the position and heading of a mobile unit within predetermined limits by means of resultant vectored thrust

3.3

electrical coupling

coupling in which the torque is transmitted by the interaction of the magnetic field produced by magnetic poles on one rotating member and induced current in the other rotating member

NOTE 1 The magnetic field may be produced by direct current excitation, permanent magnet excitation, or alternating current excitation. The induced current may be carried in a cage or insulated winding or may be present as eddy current.

NOTE 2 Couplings utilizing a wound secondary winding or a cage winding are known as slip or magnetic couplings. Couplings utilizing eddy-current effects are known as eddy-current couplings.

3.4

electric steering gear

power operated steering gear where an electric motor applies torque to the rudder stock through mechanical means only

3.5

electrohydraulic steering gear

power operated steering gear where a hydraulic pump, driven by an electric motor, applies torque to the rudder stock through hydraulic and mechanical means

3.6

main steering gear

machinery, rudder actuators, steering gear power units and ancillary equipment and the means of applying torque to the rudder stock (for example tiller or quadrant) necessary for effecting movement of the rudder for the purpose of steering the unit under normal service conditions

3.7

petroleum

complex mixture of hydrocarbons that occurs in the earth in liquid, gaseous or solid forms

3.8

propulsion machine (electric)

rotating machine normally intended to provide propulsive power

3.9

redundancy

in an item, the existence of more than one means for performing a required function

3.10

semiconductor convertor

static device using semiconducting elements to convert electric energy from one state to another

3.11

steering gear control system

equipment by which orders are transmitted from the navigating bridge to the steering gear power units

NOTE Steering gear control systems comprise transmitters, receivers, hydraulic control pumps and their associated motors, motor controllers, piping and cables, etc.

3.12

steering gear power unit (electric steering gear)

electric motor and its associated electrical equipment used to operate the steering gear

3.13

steering gear power unit (electrohydraulic steering gear)

electric motor and its associated electrical equipment and connected pump used to operate the steering gear

4 General requirements

4.1 In every mobile unit in which electric power is used for the services necessary for the safety of the unit, the generators, switchgear, motors and associated controlgear for such services, with the exception of machinery in the platform of semi-submersibles, shall be so situated or arranged that they continue to operate satisfactorily in the event of partial flooding by bilge water above the tank top in the space in which they are situated. The design criterion for partial flooding shall be assumed to be a depth of water $1/12^{\text{th}}$ beam but not exceeding a depth of 1,5 m except where this requirement is impracticable for horizontally mounted propulsion generators and motors. In such circumstances the machine enclosures shall, at least, be watertight to the underside of the shaft.

4.2 Rotating machines shall be installed to minimise the effects of motion. The design of bearings of all machines and the arrangement for their lubrication shall be adequate to withstand the motions encountered in heavy weather and operation for prolonged periods at the list and trim specified in clause 5 without the spillage of oil.

4.3 Conductors and equipment shall be placed at such a distance from each magnetic compass or shall be so disposed that the interfering external magnetic field is negligible; that is, the total singular deviation shall not exceed 30 minutes when any combination of circuits is switched on and off.

4.4 Where the total installed electrical power of the main generators exceeds 3 MW the busbars of the main switchboard shall be subdivided into at least two parts. The subdivision may be effected by removable links, circuit-breakers or other suitable means so that the main generators and any supplies to duplicated services which are directly connected to the busbars are, as far as is practicable, equally divided between the sections.

5 Limits of inclination of the unit

5.1 Dependent upon the outcome of all studies relevant to the intact and damaged stability of the unit, the appropriate authority may require or permit deviations from the angles stated in 5.2, 5.3 and 5.4.

5.2 All machines and apparatus shall operate satisfactorily under all conditions with the unit upright and when inclined up to the following angles from the normal:

- for column stabilized units, 15° in any direction;
- for self-elevating units, 10° in any direction;
- for surface units, 15° either way in list and simultaneously trimmed 5° by the bow or stern.

5.3 Main propulsion machinery and all auxiliary machinery essential to the propulsion and safety of the mobile unit shall be capable of operating under the static conditions specified in 5.2 and the following dynamic conditions:

- for column stabilized units, 22° 30' in any direction;
- for self-elevating units, 15° in any direction;
- for surface units, 22° 30' rolling and simultaneously pitching 7° 30' by the bow or stern.

5.4 Emergency machines and apparatus fitted in accordance with requirements from the appropriate authority for emergency plant shall operate satisfactorily under all conditions with the unit upright and when inclined up to the following maximum angles from the normal:

- for column stabilized units, 25° in any direction;
- for self-elevating units, 15° in any direction;
- for surface units, 22° 30' about the longitudinal axis and/or when inclined 10° about the transverse axis.

5.5 Where required by the appropriate authority, dynamic condition limits shall apply as follows:

- rotation about fore-and-aft axis (rolling), $\pm 22^\circ 30'$
- rotation about athwartship (pitching), $\pm 7^\circ 30'$

NOTE These motions may occur simultaneously.

6 Bilge pumps

6.1 Motors of permanently installed emergency bilge pumps, if any, shall be connected to an emergency switchboard.

6.2 Cables and their connections to submersible pumps shall be capable of operating under a head of water equal to their distance below the worst damaged condition waterline. The cables shall either be armoured or mechanically protected by other means and shall not be installed within the assumed extent of damage. They shall be installed in continuous lengths from above the worst damaged condition waterline to the motor terminals, entering the air-bell from its underside.

6.3 Under all circumstances it shall be possible to start the motor of a permanently installed bilge pump from a convenient point above the worst damaged condition waterline and in a space not within the assumed extent of damage.

NOTE The worst damaged condition waterline and the spaces within the assumed extent of damage shall be in accordance with IMO requirements.