

INTERNATIONAL STANDARD

**Mobile and fixed offshore units – Electrical installations –
Part 3: Equipment**

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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

**Mobile and fixed offshore units – Electrical installations –
Part 3: Equipment**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 3: Equipment

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.
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International Standard IEC 61892-3 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 2007. This edition constitutes a technical revision.

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

- a) Table 4 in the previous edition of IEC 61892-3 regarding type testing has been deleted. Information regarding environmental conditions, including requirements to vibration, is now given in Clause 4;
- b) for liquid immersed transformers requirement for overheating alarm and shut down has been added;

- c) requirements for low voltage switchgear and controlgear have been rewritten, based on IEC 61439-1 and IEC 61439-2. Only additional requirements to those given in IEC 61439 are given in the standard;
- d) requirements to low voltage circuit breakers, switches, contactors and fuses have been added;
- e) requirement for subdivision of high voltage switchboard has been added;
- f) requirements for luminaires have been deleted and replaced with reference to IEC 60598 series and IEC 60092-306;
- g) requirements for heating and cooking appliances have been deleted and replaced with reference to IEC 60335 series;
- h) requirement for portable equipment has been added.

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

FDIS	Report on voting
18/1241/FDIS	18/1256/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 61892 series, under the general title *Mobile and fixed offshore units – Electrical installations*, 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.

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

INTRODUCTION

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

This part of IEC 61892 also incorporates and co-ordinates, as far as possible, existing rules and forms a code of interpretation, where applicable, of the requirements of the International Maritime Organisation (IMO), a guide for future regulations which may be prepared and a statement of practice for offshore unit owners, constructors and appropriate organisations.

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

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

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Withhold

MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 3: Equipment

1 Scope

This part of IEC 61892 contains provisions for electrical equipment in mobile and fixed offshore units including pipeline, pumping or 'pigging' stations, compressor stations and exposed location single buoy moorings, used in the offshore petroleum industry for drilling, processing and for storage purposes.

This standard applies to equipment in all installations, whether permanent, temporary, transportable or hand-held, to a.c. installations up to and including 35 000 V and d.c. installations up to and including 1 500 V (a.c. and d.c. voltages are nominal values).

This standard sets requirements for equipment, which are additional to the requirements given in the product standard for the relevant equipment.

This standard does not apply to the electrical installations in rooms used for medical purposes or in tankers.

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

IEC 60034-14, *Rotating electrical machines – Part 14: Mechanical vibration of certain machines with shaft height 56 mm and higher – Measurement, evaluation and limits of vibration severity*

IEC 60044-1, *Instrument transformers – Part 1: Current transformers*

IEC 60065, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60076-1, *Power transformers – Part 1: General*

IEC 60076-5, *Power transformers – Part 5: Ability to withstand short circuit*

IEC 60076-6, *Power transformers – Part 6: Reactors*

IEC 60076-7, *Power transformers – Part 7: Loading guide for oil-immersed power transformers*

IEC 60076-8, *Power transformers – Part 8: Application guide*

IEC 60076-11, *Power transformers – Part 11: Dry-type transformers*

- IEC 60076-12, *Power transformers – Part 12: Loading guide for dry-type power transformers*
- IEC 60092-306:2009, *Electrical installations in ships – Part 306: Equipment – Luminaires and lighting accessories*
- IEC 60146-1-1:2009, *Semiconductor converters – General requirements and line commutated converters – Part 1-1: Specification of basic requirements*
- IEC/TR 60146-1-2:2011, *Semiconductor converters – General requirements and line commutated converters – Part 1-2: Application guide*
- IEC 60146-1-3:1991, *Semiconductor converters – General requirements and line commutated converters – Part 1-3: Transformers and reactors*
- IEC 60146-2:1999, *Semiconductor converters – Part 2: Self-commutated semiconductor converters including direct d.c. converters*
- IEC 60269-1, *Low-voltage fuses – Part 1: General requirements*
- IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar applications) – Examples of standardized systems of fuses A to F*
- IEC/TR 60269-5 *Low-voltage fuses – Part 5: Guidance for the application of low-voltage fuses*
- IEC 60282-1, *High-voltage fuses – Part 1: Current-limiting fuses*
- IEC 60282-2, *High-voltage fuses – Part 2: Expulsion fuses*
- IEC 60309-4, *Plugs, socket-outlets and couplers for industrial purposes – Part 4: Switched socket-outlets and connectors with or without interlock*
- IEC 60331 (all parts), *Tests for electric cables under fire conditions – Circuit integrity*
- IEC 60332-1-2:2004, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame*
- IEC 60335 (relevant parts), *Household and similar electrical appliances*¹
- IEC 60519-10, *Safety in electroheat installations – Part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications*
- IEC 60529, *Degrees of protection provided by enclosures (IP Code)*
- IEC 60598-1, *Luminaires – Part 1: General requirements and tests*
- IEC 60598-2-1, *Luminaires – Part 2-1: Particular requirements – Fixed general purpose luminaires*
- IEC 60598-2-2, *Luminaires – Part 2-2: Particular requirements – Recessed luminaires*
- IEC 60598-2-5, *Luminaires – Part 2-5: Particular requirements – Floodlights*

¹ "Relevant parts" are those parts of the standards which are relevant for use on mobile and fixed offshore units.

IEC 60598-2-6, *Luminaires – Part 2: Particular requirements – Section 6: Luminaires with built-in transformers for filament lamps*

IEC 60598-2-22, *Luminaires – Part 2-22: Particular requirements – Luminaires for emergency lighting*

IEC/TR 60616, *Terminal and tapping markings for power transformers*

IEC 60622:2002, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Sealed nickel-cadmium prismatic rechargeable single cells*

IEC 60669 (all parts), *Switches for household and similar fixed-electrical installations*

IEC 60884 (all parts), *Plugs and socket-outlets for household and similar purposes*

IEC 60896-11:2002, *Stationary lead-acid batteries – Part 11: Vented types – General requirements and methods of tests*

IEC 60896-21:2004, *Stationary lead-acid batteries – Part 21: Valve regulated types – Methods of test*

IEC 60896-22:2004, *Stationary lead-acid batteries – Part 22: Valve regulated types – Requirements*

IEC 60906 (all parts), *IEC system of plugs and socket-outlets for household and similar purposes*

IEC 60947-2:2006, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*

IEC 60947-3:2008, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-4-1:2009, *Low-voltage switchgear and controlgear – Part 4-1 Contactors and motor-starters – Electromechanical contactors and motor-starters*

IEC 61097 (all parts), *Global maritime distress and safety system (GMDSS)*

IEC 61131-1, *Programmable controllers – Part 1: General information*

IEC 61131-2, *Programmable controllers – Part 2: Equipment requirements and tests*

IEC 61378-1:2011, *Converter transformers – Part 1: Transformers for industrial applications*

IEC 61439-1:2011, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

IEC 61439-2:2011, *Low-voltage switchgear and controlgear assemblies – Part 2: Power switchgear and controlgear assemblies*

IEC/TR 61641:2008, *Enclosed low-voltage switchgear and controlgear assemblies – Guide for testing under conditions of arcing due to internal fault*

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

IEC 61869-3, *Instrument transformers – Part 3: Additional requirements for inductive voltage transformers*

IEC 61892-1:2010, *Mobile and fixed offshore units – Electrical installations – Part 1: General requirements and conditions*

IEC 61892-2, *Mobile and fixed offshore units – Electrical installations – Part 2: System design*

IEC 61892-5, *Mobile and fixed offshore units – Electrical installations – Part 5: Mobile units*

IEC 61892-7, *Mobile and fixed offshore units – Electrical installations – Part 7: Hazardous areas*

IEC 62040-2, *Uninterruptible power systems (UPS) – Part 2: Electromagnetic compatibility (EMC) requirements*

IEC 62262, *Degree of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62271-100:2008, *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-102:2001, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-106:2011, *High-voltage switchgear and controlgear – Part 106: Alternating current contactors, contactor-based controllers and motor-starters*

IEC 62271-200:2011, *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 62271-201:2006, *High-voltage switchgear and controlgear – Part 201: AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

IEC 62395-1, *Electrical resistance trace heating systems for industrial and commercial applications – Part 1: General and testing requirements*

IMO, *Code of Safety for Diving Systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61892-1 and the following apply.

3.1 computer-based system

system that consists of one or more programmable electronic devices with the connections, peripherals and software necessary to automatically carry out specified functions

Note 1 to entry The following types of programmable devices could form part of a computer system: mainframe, mini-computer, micro-computer, programmable logic controller.

3.2 converter

device for changing one or more characteristics associated with electric energy

Note 1 to entry Characteristics associated with energy are for example voltage, number of phases and frequency including zero frequency.

[SOURCE: IEC 60050-151:2001, 151-13-36]

3.3 trace heating

utilization of electric trace heater cables, pads, panels and support components, externally applied and used to raise or maintain the temperature of contents in piping, tanks and associated equipment

[SOURCE: IEC 60050-426:2008, 426-08-14]

3.4 electromagnetic compatibility EMC

the ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment

[SOURCE: IEC 60050-161:1990, 161-01-07]

3.5 emergency switchboard

switchgear and controlgear assembly which is normally supplied by the main switchboard but which, 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 for all electrical consumers essential to the safety of the crew, contractors, visitors and the unit under emergency conditions

3.6 expert system

knowledge-based system capable of solving problems in a particular domain or field of application by drawing inferences from a knowledge base developed from expert knowledge

[SOURCE: IEC 60050-351:2006, 351-21-47, modified]

3.7 extra-low voltage ELV

voltage which does not exceed 50 V a.c. r.m.s. between conductors, or between any conductor and earth.

[SOURCE: IEC 60050-826:2004, 826-12-30, modified]

Note 1 to entry The voltage limit should not be exceeded, either at full load or no load, but it is assumed, for the purpose of this definition, that any transformer or converter is operated at its rated supply voltage.

Note 2 to entry Information about protection by extra-low voltage is given in IEC 60364-4-41.

3.8 inverter

electric energy converter that changes direct electric current to single-phase or polyphase alternating currents

[SOURCE: IEC 60050-151:2001, 151-13-46]