

INTERNATIONAL STANDARD

**Mobile and fixed offshore units – Electrical installations –
Part 1: General requirements and conditions**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MOBILE AND FIXED OFFSHORE UNITS –
ELECTRICAL INSTALLATIONS –****Part 1: General requirements and conditions**

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 61892-1 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

This second edition cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

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

- a) the d.c.voltages given in Clause 1, have been updated in order to ensure uniform requirements for all parts of the standard;
- b) the requirement to EMC has been rewritten to comply with the requirements of IEC 61000-2-4;
- c) a clause regarding environmental impact has been added;
- d) Annex A (Guidance on environmental conditions) has been deleted;

e) Annex B (Informative) regarding cold climate precautions has been added.

The text of this standard based on the following documents:

FDIS	Report on voting
18/1166/FDIS	18/1176/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 parts of the IEC 61892 series can be found, under the general title *Mobile and fixed offshore units – Electrical installations*, 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.

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INTRODUCTION

The IEC 61892 series of International Standards is intended to enable 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 which are used for the purpose of exploration or exploitation of petroleum resources.

This part of the IEC 61892 series 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 Organization, a guide for future regulations which may be prepared and a statement of practice for offshore unit owners, constructors and appropriate organizations.

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.

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MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 1: General requirements and conditions

1 Scope

This part of IEC 61892 series contains provisions for electrical installations 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 storage purposes.

This International Standard applies to 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 does not apply either to fixed equipment for medical purposes or to the electrical installations of tankers.

NOTE For medical rooms, see IEC 60364-7-710.

2 Normative references

The following referenced documents are indispensable for the application 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 60034-1:2010, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60079 (all parts), *Explosive atmospheres*

IEC 61000-2-4:2002, *Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61892-2:2005, *Mobile and fixed offshore units – Electrical installations – Part 2: System design*

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

IMO-110E, IMO-111F and IMO 113S, *International Convention for the Safety of Life at Sea (SOLAS)*

IMO MODU Code, *Code for the construction and equipment of mobile offshore drilling units*

3 Terms and definitions

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

NOTE The terms and definitions included in this part are those having general application in the IEC 61892 series. Terms and definitions applying to particular apparatus or equipment are included in the other parts of IEC 61892.

3.1

appropriate authority

governmental body and/or classification society with whose rules a unit is required to comply

3.2

equipment

single apparatus or set of devices or apparatuses, or the set of main devices of an installation, or all devices necessary to perform a specific task

NOTE Examples of equipment are a power transformer, measuring equipment.

[IEC 60050-151:2001, 151-11-25, modified]

3.3

apparatus

device or assembly of devices which can be used as an independent unit for specific functions

[IEC 60050-151:2001, 151-11-22, modified]

3.4

room with a controlled atmosphere

room where the temperature and humidity can be controlled within specified limits

3.5

degree of protection provided by enclosures (of electrical apparatus)

measures applied to the enclosures of electrical equipment and apparatus to provide for :

- 1) protection of persons against contact with or approach to live parts and against contact with moving parts (other than smooth rotating shafts and the like) inside the enclosure and the protection of the apparatus against ingress of solid foreign bodies
- 2) protection of the apparatus inside the enclosure against harmful ingress of water

[IEC 60050-426:2008, 426-04-02, modified]

NOTE 1 For further information regarding degree of protection, see IEC 60529.

NOTE 2 Explanation of the numerals used for classification of degree of protection is given in Tables A.1 and A.2.

3.6

distribution board

assembly containing different types of switchgear and controlgear associated with one or more outgoing electric circuits fed from one or more incoming electric circuits, together with terminals for the neutral and protective conductors, if required

[IEC 60050-826:2004, 826-16-08, modified]

3.7

earth

general mass of the metal structure or hull of the unit

NOTE In the U.S.A. and Canada "ground" is used instead of "earth".

3.8 earthed

connected to the general mass of the structure or hull of the unit in such a manner as will ensure at all times an immediate discharge of electrical energy without danger

3.9 essential services

services essential for the navigation, steering or manoeuvring of the mobile unit, or for the safety of human life, or for special characteristics of the unit (for example special services)

3.10 frequency

3.10.1 cyclic frequency variation

periodic deviation in frequency during normal operation such as might be caused by regularly repeated loading

$$\text{Cyclic frequency variation} = \frac{\pm(f_{\max} - f_{\min}) \times 100}{2 f_{\text{nominal}}} \%$$

3.10.2 frequency tolerance

maximum departure from nominal frequency during normal operation conditions excluding transient and cyclic frequency variations

NOTE Frequency tolerance is a steady state tolerance and includes variations caused by loads and governor characteristics. It also includes variations due to environmental conditions.

3.10.3 frequency transient

sudden change in frequency which goes outside the frequency tolerance limits and returns to and remains inside these limits within a specified recovery time after initiation of the disturbance (time range: seconds)

3.11 insulation

3.11.1 basic insulation

insulation of hazardous-live-parts which provides basic protection against electric shock

NOTE Basic insulation does not necessarily include insulation used exclusively for functional purposes.
[IEC 60050-195:1998, 195-06-06, modified]

3.11.2 supplementary insulation

independent insulation applied in addition to basic insulation, for fault protection in the event of a failure of basic insulation

[IEC 60050-195:1998, 195-06-07, modified]

3.12 live part

conductor or conductive part intended to be energized in normal operation, including a neutral conductor, but by convention not a PEN conductor or PEM conductor or PEL conductor

NOTE This concept does not necessarily imply a risk of electric shock.
[IEC 60050-195:1998, 195-02-19]

3.13**PEN conductor**

conductor combining the functions of both a protective earthing conductor and a neutral conductor

[IEC 60050-195:1998, 195-02-12]

3.14**PEM conductor**

conductor combining the functions of both a protective earthing conductor and a mid-point conductor

[IEC 60050-195:1998, 195-02-13]

3.15**PEL conductor**

conductor combining the functions of both a protective earthing conductor and a line conductor

[IEC 60050-195:1998, 195-02-14]

3.16**petroleum**

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

3.17**point (in wiring)**

any termination of the fixed wiring intended for the attachment of a luminaire or for connecting to the supply of a current-using appliance

3.18**spaces****3.18.1****accommodation spaces**

spaces used for public spaces, corridors, lavatories, cabins, offices, crew quarters, hospitals, game and hobby rooms, pantries containing no cooking appliances and similar spaces

3.18.2**machinery spaces**

spaces containing propelling machinery, boilers, oil fuel units, steam and internal combustion engines, hydrocarbon process equipment, water treatment and handling equipment, drilling and associated equipment, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air-conditioning machinery, and similar spaces and trunks to such spaces

3.18.3**public spaces**

portions of the accommodation used for halls, dining rooms, lounges, and similar permanently enclosed spaces

3.19**voltages****3.19.1****voltage tolerance**

maximum departure from nominal user voltage during normal operating conditions, excluding transient and cyclic voltage variations

NOTE Voltage tolerance is a steady state tolerance and includes voltage drop in cables and voltage regulator characteristics. It also includes variations due to environmental conditions.