

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Mobile and fixed offshore units – Electrical installations –  
Part 6: Installation**

**Unités mobiles et fixes en mer – Installations électriques –  
Partie 6: Installation**

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**Mobile and fixed offshore units – Electrical installations –  
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**MOBILE AND FIXED OFFSHORE UNITS –  
ELECTRICAL INSTALLATIONS –****Part 6: Installation**

## FOREWORD

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International Standard IEC 61892-6 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 1, size of earth continuity conductors has been replaced with the table in IEC 61892-4.
- b) The requirements for installation of batteries has been rewritten in order to distinguish better between batteries of the vented type and VRLA/sealed type.
- c) An informative annex regarding cable termination has been added.



- d) The applicability for DC installations has been increased from 750 V to 1 500 V, in accordance with Part 1 of the series.

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

FDIS	Report on voting
18/1351/FDIS	18/1360/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, 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

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## INTRODUCTION

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

This part of IEC 61892 series also incorporates and co-ordinates, as far as possible, existing rules and forms a code of interpretation, where applicable, of the requirements laid down by the International Maritime Organization, and constitutes 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 6: Installation

### 1 Scope

This part of IEC 61892 contains provisions for electrical installation 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.

It applies to all installations, whether permanent, temporary, transportable or hand-held, to AC installations up to and including 35 000 V and DC installations up to and including 1 500 V (AC and DC voltages are nominal values).

This standard does not apply to 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 60092-350:2008, *Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications*

IEC 60447, *Basic and safety principles for man-machine interface, marking and identification – Actuating principles*

IEC 60623, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Vented nickel-cadmium prismatic rechargeable single cells*

IEC 60825 (all parts), *Safety of laser products*

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

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

IEC 61892-2:2012, *Mobile and fixed offshore units – Electrical installations – Part 2: System design*

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

IEC 61892-4:2007, *Mobile and fixed offshore units – Electrical installations – Part 4: Cables*

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

ISO 8468, *Ships and marine technology – Ship's bridge layout and associated equipment – Requirements and guidelines*

SOLAS 1974 *International Convention for the Safety of Life at Sea, Consolidated edition 2009*

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

IMO, *Code on Alerts and Indicators, 2009*

### 3 Terms and definitions

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

#### 3.1

##### **battery compartment**

compartment comprising dedicated rooms, dedicated lockers and dedicated boxes for installation of batteries

#### 3.2

##### **equipotential bonding**

provision of electric connections between conductive parts, intended to achieve equipotentiality

[SOURCE: IEC 60050-195:1998, 195.01.10]

#### 3.3

##### **cable tray system**

##### **cable ladder system**

assembly of cable supports consisting of cable tray lengths or cable ladder lengths and other system components

[SOURCE: IEC 61537:2006, 3.1]

#### 3.4

##### **surface heating**

##### **trace heating**

heat generated in the surface layer of a body to be heated by electrical means in order to raise or maintain its temperature

#### 3.5

##### **exposed conductive part**

conductive part which can readily be touched and which is not normally alive, but which may become alive under fault conditions

Note 1 to entry: Typical exposed conductive parts are walls of enclosures, operating handles, etc.

[SOURCE: IEC 60050-441:1984, 441.11.10]

#### 3.6

##### **extraneous-conductive-part**

conductive part not forming a part of the electrical installation and liable to introduce an electric potential, generally the potential of a local earth

[SOURCE: IEC 60050-195:1998, 195.06.11]

### 3.7

#### **primary structural damage**

damage which can result from lightning strike to units which do not provide a path of low resistance to earth for the passage of lightning currents

EXAMPLE Units of non-metallic construction or those having substantial non-metallic members.

### 3.8

#### **extra-low voltage**

##### **ELV**

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

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.

### 3.9

#### **sealed cell**

cell which remains closed and does not release either gas or liquid when operated within the limits specified by the manufacturer

Note 1 to entry: A sealed cell may be equipped with a safety device, to prevent a dangerously high internal pressure and is designed to operate during its life in its original sealed state.

[SOURCE IEC 60050-482:2004: 482.05.17)

### 3.10

#### **secondary damage**

damage to units or to their electrical installations, which can result as an indirect consequence of a lightning strike to a unit or to its immediate vicinity

Note 1 to entry: A path to earth of low resistance may not prevent secondary damage, which may occur as a result of high values of induced or resistance drop voltages produced by the passage of lightning currents.

### 3.11

#### **superstructure**

any additional structure which is above a baseline

EXAMPLE Hull.

### 3.12

#### **support device**

system component designed to provide mechanical support and which may limit movement of a cable runway

[SOURCE: IEC 61537:2006, 3.7]

### 3.13

#### **system component**

part used within the system as cable tray length or cable ladder length, cable tray fitting or cable ladder fitting, support device, mounting device and system accessory

Note 1 to entry: System components may not necessarily be included together in a system. Different combinations of system components may be used.

[SOURCE: IEC 61537:2006, 3.2]

**3.14**  
**valve regulated lead acid battery**  
**VRLA**

secondary battery in which cells are closed but have a valve which allows the escape of gas if the internal pressure exceeds a predetermined value

Note 1 to entry: The cell or battery cannot normally receive addition to the electrolyte.

Note 2 to entry: This note applies to the French language only.

[SOURCE IEC 60050-482:2004, 482.05.15]

**3.15**  
**vented cell**

secondary cell having a cover provided with an opening through which products of electrolysis and evaporation are allowed to escape freely from the cell to the atmosphere

[SOURCE: IEC 60050-482:2004, 482.05.14]

**4 General requirements**

**4.1 Labelling**

Each control panel, subpanel, indicating instrument, control handle, alarm, signal lamp, recording instrument, etc. shall be clearly and systematically identified by means of self-explanatory and unambiguous labels.

**4.2 Labels**

Labels shall be permanently secured, placed consistently relative to instruments, etc. and shall be made of durable material, bearing clear and indelible characters and numbers.

The labels shall be engraved or embossed on plastic-laminated or metallic material and be permanently fixed.

If other fixing means than screws or rivets are used, they shall provide an equivalent level of reliability.

**4.3 Protection from condensation**

As far as practicable, arrangements shall be made to prevent condensation in enclosures.

**4.4 Protection during installation period**

Electrical equipment shall be well protected during the installation period to prevent damage from welding, caulking, painting and similar injurious operations.

**5 Equipment earthing and bonding**

**5.1 General**

**5.1.1** All metallic parts of a unit, that are not normally current-carrying parts, shall be designated as either an exposed conductive part or an extraneous-conductive-part.

- a) Exposed conductive parts shall be connected to earth under the specific conditions for each type of system earthing:
- for IT-systems, the exposed conductive parts shall be connected directly to earth;

- for TN-S systems, the exposed conductive parts shall be connected to the protective conductor, which is connected to earth at the neutral point of the distribution system.

b) Extraneous-conductive-parts shall be connected to an equipotential bonding system.

For units that have separate modules and/or concrete structures, equipotential bonding shall be installed between extraneous-conductive-parts.

It shall be ensured that there is no detrimental mutual influence between the different protective measures applied in the same installation or in part of an installation.

Earth or an equipotential bonding system may be the steel structure or the hull of a unit.

For the definition of IT- and TN-S system, and requirements to earthing of system neutral points, see IEC 61892-2.

For earthing and bonding requirements in hazardous areas, see IEC 61892-7.

**5.1.2** Earth bars, when provided, shall be easily accessible for usage, inspection and maintenance. All earthing bars and terminals shall be visible and possible to be checked also after termination of cables. Separate connections shall be used for each individual earth conductor.

## **5.2 Earthing of exposed conductive parts**

**5.2.1** Unless specifically included in the following exemptions, all exposed conductive parts shall be earthed.

Exemption:

- lamp caps;
- shades, reflectors and guards, supported on lampholders or luminaires constructed of, or shrouded in, non-conducting material;
- metal parts on non-conducting material, or screws in or through, non-conducting material, which are separated by such material from current-carrying parts, and from earthed non-current-carrying parts in such a way that in normal use they cannot become live or come into contact with earthed parts;
- portable appliances which have a double and/or supplementary insulation (see IEC 61892-1) provided that the appliances conform with recognized safety requirements;
- bearing housings which are insulated in order to prevent the circulation of current in the bearings;
- clips for fluorescent lighting tubes;
- equipment supplied at extra-low voltage (safety voltage);
- cable clips;
- equipment of "all-insulated" construction in which the insulation enclosing the equipment is durable and continuous;
- fixed equipment or parts of equipment which, although not shrouded in insulation material, are nevertheless protected in such a way that they cannot be touched and cannot come into contact with exposed metal;
- equipment located in special earth-free rooms.

**5.2.2** Metal parts of portable appliances, other than current-carrying parts and parts exempted in 5.2.1, shall be connected to earth by means of a conductor in the flexible cable or cord, which complies with Table 1 and which is connected, for example, through the associated plug and socket-outlet.