

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

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

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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 fourth edition cancels and replaces the third 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) requirements for protection during equipment storage have been added;
- b) the special requirements for distribution board enclosures in accommodation spaces have been deleted;
- c) requirements for installation of UPS have been updated;
- d) requirements regarding the installation of batteries have been modified;

- e) requirements for large single-core cables for three-phase AC have been updated;
- f) requirements in relation to cable transit systems have been added;
- g) the table on the sizes of earth continuity conductors and equipment earthing connections, set out in IEC 61892-4:2007, has been included;
- h) requirements as to the installation of controls and instrumentation have been modified; clauses relevant to design and equipment have been deleted.

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

FDIS	Report on voting
18/1654/FDIS	18/1663/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61892 series, published 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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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- withdrawn,
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INTRODUCTION

IEC 61892 forms a series of International Standards for safety in the design, selection, installation, maintenance and use of electrical equipment for the generation, transmission, 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 IEC 61892 incorporates and coordinates, as far as possible, existing rules and forms a code of interpretation, where applicable, of the requirements of the International Maritime Organization (IMO), and constitutes a guide for future regulations which may be prepared and a statement of practice for offshore unit owners, designers, installers and appropriate organizations.

This document is based on solutions and methods which are in current use, but it is not intended to impede development of new or improved techniques.

In this revision, voltage limitations have been removed. However, voltage limitations may be given in the referenced equipment standards. The removal of voltage limitations is considered necessary due to interconnection of, and supply from shore to offshore units. In such cases, transmission voltages up to 132 kV AC and 150 kV DC are used and higher voltages are being planned.

The IEC 61892 series aims to constitute a set of International Standards for the offshore petroleum industry, but it is not intended to prevent their use beyond petroleum installations.

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MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 6: Installation

1 Scope

This part of IEC 61892 provides specific requirements for the installation of electrical equipment in mobile and fixed offshore units, including pipeline, pumping or "pigging" stations, compressor stations and single buoy moorings, used in the offshore petroleum industry for drilling, production, accommodation, processing, storage and offloading purposes.

It applies to all installations, whether permanent, temporary, transportable or hand-held, to AC installations and DC installations without any voltage level limitation. Referenced equipment standards may give voltage level limitations.

This document specifies requirements such as those concerning

- protection during equipment storage and in the installation period,
- installation of generators and motors,
- installation of transformers,
- installation of switchgear and controlgear assemblies,
- installation of semiconductor converters and UPS,
- installation of secondary cells and batteries,
- installation of luminaires,
- installation of heating and cooking appliances,
- installation of trace and surface heating,
- installation of cables and wiring, both low-voltage and high-voltage cables,
- requirements in relation to earthing and bonding,
- lightning protection;
- testing of completed installation, and
- documentation.

This document does not apply to

- fixed equipment for medical purposes,
- electrical installations of tankers, and
- control of ignition sources other than those created by electrical equipment.

NOTE 1 For medical rooms, IEC 60364-7-710 provides specific requirements. Requirements for tankers are given in IEC 60092-502.

NOTE 2 Guidance on protection of non-electrical equipment can be found in ISO 80079-36, ISO 80079-37 and IMO 2009 MODU Code, 6.7.

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 60092-350:2014, *Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications*

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

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCS)*

IEC 60825-12, *Safety of laser products – Part 12: Safety of free space optical communication systems used for transmission of information*

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

IEC 61892-1:2019, *Mobile and fixed offshore units – Electrical installations – Part 1: General requirements and conditions*

IEC 61892-3:2019, *Mobile and fixed offshore units – Electrical installations – Part 3: Equipment*

IEC 61892-7:2019, *Mobile and fixed offshore units – Electrical installations – Part 7: Hazardous areas*

IEC 61914, *Cable cleats for electrical installations*

IEC 62305-3:2010, *Protection against lightning – Part 3: Physical damage to structures and life hazard*

IEC 62485-2:2010, *Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries*

IMO, 2009 MODU Code, *Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009, 2010 edition*

3 Terms and definitions

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

braid armour

covering formed from braided metal wires used to protect a cable from external mechanical effects

[SOURCE: IEC 60092-350:2014, 3.3, modified – The notes to entry have been deleted.]

3.2

armour

covering consisting of metal tape(s) or wires, generally used to protect the cable from external mechanical effects

[SOURCE: IEC 60050-461:2008, 461-05-06]

3.3

electrostatic screen

electrostatic shield (North America)

earthed metallic layer surrounding a cable which confines the electric field generated by the cable within the cable cores, pair(s), triple(s) or quad(s), and/or protects the core(s), pair(s), triple(s) or quad(s) from external influence

Note 1 to entry: Metallic sheaths, foils, braids, armours and earthed concentric conductors may also serve as an electrostatic screen, provided they are effectively earthed.

[SOURCE: IEC 60092-350:2014, 3.9, modified – In the note to entry, the word "grounded" has been deleted.]

3.4

insulation screen

electrical screen of non-metallic semi-conducting layer in combination with a metallic layer

[SOURCE: IEC 60092-350:2014, 3.18, modified – The second preferred term "core screen" has been omitted.]

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3.5

battery compartment

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

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3.6

battery crate

container with frame walls for holding several cells or batteries

[SOURCE: IEC 60050-482:2004, 482-05-10]

3.7

battery tray

container with a base and walls for holding several cells or batteries

[SOURCE: IEC 60050-482:2004, 482-02-35]

3.8

battery rack

support, stand or grating with one or more levels or tiers for the installation of cells or mono-bloc containers in a stationary battery

[SOURCE: IEC 60050-482:2004, 482-05-24]

3.9

equipotential bonding

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

[SOURCE: IEC 60050-195:1998, 195-01-10]

3.10**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]

3.11**surface heating**
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, 426-20-39, modified – The preferred term "surface heating" has been added.]

3.12**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 60050-441:2000, 441-11-1, modified – Hyphens have been added to the term.]

3.13**extraneous-conductive-part**

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

[SOURCE: IEC 60050-195:1998, 195-06-11]

3.14**extra-low voltage**
ELV

voltage which does not exceed 50 V AC RMS or 120 V DC between conductors, or between any conductor and earth.

Note 1 to entry: Information about protection by extra-low voltage is given in IEC 60364-4-41.

3.15**PELV**
PELV system

electric system in which the voltage cannot exceed the value of extra-low voltage:

- under normal conditions and
- under single fault conditions, except earth faults in other electric circuits

Note 1 to entry: PELV is the abbreviation for protective extra-low voltage.

[SOURCE: IEC 60050-826:2004: 826-12-32, modified – The abbreviated term "PELV" has been added.]

3.16

SELV

SELV system

electric system in which the voltage cannot exceed the value of extra-low voltage:

- under normal conditions and
- under single fault conditions, including earth faults in other electric circuits

Note 1 to entry: SELV is the abbreviation for safety extra-low voltage.

[SOURCE: IEC 60050-826:2004: 826-12-31, modified – The abbreviated term "SELV" has been added.]

3.17

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]

3.18

support device

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

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[SOURCE: IEC 61537:2006, 3.7, modified – The note to entry has been omitted.]

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3.19

system component

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

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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]

3.20

uninterruptible power system

UPS

combination of convertors, switches and energy storage devices (such as batteries), constituting a power system for maintaining continuity of load power in case of input power failure

[SOURCE: IEC 62040-1:2017, 3.101, modified – The note to entry has been deleted.]

3.21

VRLA

valve regulated lead acid battery

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 additions to the electrolyte.

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

[SOURCE: IEC 60050-482:2004, 482-05-15, modified – A second note to entry has been added.]

3.22

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. Equipment marking/labelling shall be found in the relevant documentation for the electrical installation.

Regarding requirements for labelling and labels, see IEC 61892-3:2019, 4.5.

4.2 Protection during equipment storage

Where the installation phase requires storage of equipment and materials, instructions contained in the supplier's documentation shall be followed to avoid damage or deterioration of equipment or materials.

Particular attention should be given to the storage of batteries in order to preserve their service lifetime, or the batteries should be purchased and fitted shortly before tow out.

4.3 Protection during installation period

Electrical equipment shall be well protected during the installation period to prevent damage from welding, painting and similar injurious operations. If the installation phase forecasts a long-time schedule, appropriate protection against damage due to weather conditions shall be provided.

After activation, batteries should be kept float charged and under controlled ambient temperature limits to avoid battery life impairment.

5 Generators and motors – Installation

Generators and large motors should, where practicable, be installed to minimise the effects from the motion of the mobile unit or floating unit (see IEC 61892-5). For manned units, generators and motors shall, where practicable, be installed to minimise the impact of noise and vibration within the living quarters.

Regarding requirements as to layout planning, see IEC 61892-1:2019, 4.9.

Regarding requirements for lubrication, see IEC 61892-3, and for mobile units see also IEC 61892-5.

6 Transformers – Installation and location

6.1 Transformers shall be installed in sufficiently ventilated compartments, accessible only to authorized personnel. The one exception to this rule is that air-cooled transformers