

# 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**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2019 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

---

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

[webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.



IEC 61892-6

Edition 4.0 2019-04

# 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**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 29.260.99; 47.020.60

ISBN 978-2-8322-6671-7

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD .....	5
INTRODUCTION .....	7
1 Scope .....	8
2 Normative references .....	8
3 Terms and definitions .....	9
4 General requirements .....	13
4.1 Labelling .....	13
4.2 Protection during equipment storage .....	13
4.3 Protection during installation period .....	13
5 Generators and motors – Installation .....	13
6 Transformers – Installation and location .....	13
7 Switchgear and controlgear assemblies .....	14
7.1 Location .....	14
7.2 Insulating flooring or insulating mats .....	15
7.3 Passageways in front of switchgear and controlgear assemblies .....	15
7.4 Space at the rear and passageways .....	15
8 Semiconductor converters .....	16
9 Secondary cells and batteries .....	16
9.1 General .....	16
9.2 Location .....	16
9.3 Electrical installation in battery compartments .....	17
9.4 Protection against corrosion .....	18
9.5 Fixing and supports .....	18
9.6 Protection against electric shock .....	18
9.7 Identification labels or marking .....	19
10 Uninterruptible power systems .....	19
11 Luminaires .....	19
11.1 Degree of protection and safety requirements .....	19
11.2 Emergency and escape lighting .....	20
11.3 Navigation aid and obstruction light system .....	20
12 Heating and cooking appliances .....	20
12.1 Guarding of combustible materials .....	20
12.2 Position of controlgear and switchgear .....	20
12.3 Mounting of space-heating appliances .....	20
13 Trace and surface heating .....	20
13.1 General .....	20
13.2 Trace heating cables .....	20
13.3 Marking .....	21
13.4 Protection .....	21
13.5 Requirements for installation in hazardous areas .....	21
13.6 Mechanical protection .....	21
13.7 Junction boxes .....	21
14 Cables and wiring .....	21
14.1 General .....	21

14.2	Installation .....	21
14.3	Cable runs .....	23
14.4	Bending radius.....	23
14.5	Cable cleating and strapping.....	24
14.6	Splices and branch circuits .....	25
14.7	Cable glands – Blanking and drain plugs.....	25
14.8	Cable termination.....	25
14.8.1	General .....	25
14.8.2	Earthing of braid armour and electrostatic screen of instrument and intrinsically safe cables.....	27
14.9	Cable transit systems.....	27
14.10	Cable ladders and trays .....	28
15	Equipment earthing and bonding .....	29
15.1	General.....	29
15.2	Earthing of exposed-conductive-parts .....	29
15.3	Equipotential bonding .....	31
15.4	Bonding connections.....	31
15.5	Connections to the unit structure.....	31
15.6	Protection against galvanic corrosion.....	32
15.7	Metal coverings of cables.....	32
15.8	Cable racks and cable trays.....	32
16	Lightning protection .....	33
16.1	Primary lightning protection system.....	33
16.2	Air terminals .....	33
16.3	Secondary lightning protection system .....	34
17	Communication.....	34
18	Test of completed installation .....	35
18.1	Inspections and tests .....	35
18.2	Insulation testing instruments.....	35
18.3	Insulation resistance .....	36
18.3.1	Wiring.....	36
18.3.2	Generators and motors .....	36
18.3.3	Switchboards, section boards and distribution boards.....	36
18.4	Generators.....	37
18.5	Switchgear.....	37
18.6	Lighting, heating and galley equipment .....	37
18.7	Communication systems .....	37
18.8	Emergency and safety systems.....	37
18.9	Earthing.....	38
18.10	Voltage drop .....	38
18.11	Requirements of international conventions and regulations .....	38
19	Documentation .....	38
19.1	General.....	38
19.2	Equipment .....	38
19.3	Testing .....	38
19.4	Maintenance .....	39
Annex A (informative)	Performance test.....	40
A.1	General.....	40

A.2	Motor .....	40
A.3	Statutory requirements .....	40
A.4	Interference .....	40
A.5	Batteries .....	40
A.6	Ventilation of battery installations .....	40
Annex B (informative) Examples of cable termination.....		41
Bibliography.....		45
Figure 1 – Recommended arrangement for installation of single-core cables – Flat configuration.....		22
Figure 2 – Recommended arrangement for installation of single-core cables – Trefoil configuration.....		22
Figure B.1 – Equipment with through gland.....		41
Figure B.2 – Equipment where earthing is required – with Ex d braid armour clamping gland .....		42
Figure B.3 – Equipment where no earthing is required – with Ex d braid armour clamping gland – Termination of instrument cable.....		43
Figure B.4 – Equipment where earthing is required – Ex d braid armour clamping gland – Termination of power cable .....		44
Figure B.5 – Detail of heat shrink isolation between outer braid armour and electrostatic screen.....		44
Table 1 – Location of batteries versus charging power.....		17
Table 2 – Bending radii for cables rated up to 1,8/3 kV .....		24
Table 3 – Bending radii for cables rated at 3,6/6,0(7,2) kV and up to and including 18/30 kV .....		24
Table 4 – Enclosure-gland type.....		25
Table 5 – Sizes of earth continuity conductors and equipment earthing connections .....		30
Table 6 – Test voltages.....		36

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MOBILE AND FIXED OFFSHORE UNITS –  
ELECTRICAL INSTALLATIONS –****Part 6: Installation****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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

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

## 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.

# 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.