BS IEC 61892-6:2013



BSI Standards Publication

Mobile and fixed offshore units — Electrical installations

Part 6: Installation

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of IEC 61892-6:2013. It supersedes BS IEC 61892-6:2007 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee JPEL/18, Electrical installations of ships and of mobile and fixed offshore units.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2014.
Published by BSI Standards Limited 2014

ISBN 978 0 580 78529 0
ICS 29.260.99; 47.020.60

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2014.

Amendments/corrigenda issued since publication

Date	Text affected

IEC 61892-6

Edition 3.0 2013-12

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

PRICE CODE
CODE PRIX

X

ICS 29.260.99, 47.020.60

ISBN 978-2-8322-1288-2

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.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

CONTENTS

FOREWORD 6
INTRODUCTION 8
1 Scope 9
2 Normative references 9
3 Terms and definitions 10
4 General requirements 12
4.1 Labelling 12
4.2 Labels 12
4.3 Protection from condensation 12
4.4 Protection during installation period 12
5 Equipment earthing and bonding 12
5.1 General 12
5.2 Earthing of exposed conductive parts 13
5.3 Equipotential bonding 14
5.4 Bonding connections 15
5.5 Connections to the unit structure 15
5.6 Protection against galvanic corrosion 15
5.7 Metal coverings of cables 15
5.8 Cable racks and cable trays 16
5.9 Ductings of heating, ventilation, air-condition (HVAC) and vessels 17
6 Cables and wiring 17
6.1 General 17
6.2 Installation 17
6.3 Cable-runs 18
6.4 Cable cleating and strapping 18
6.5 Joints and tappings 19
6.6 Cable ends 19
6.7 Cable termination 20
6.8 Cable ladders and trays 21
6.9 Cables and wiring for interconnection of equipment 22
7 Generators and motors 22
7.1 General 22
7.2 Installation 22
8 Transformers 22
8.1 Installation and location 22
8.2 Isolation of windings 23
9 Switchgear and controlgear assemblies 23
9.1 Location 23
9.2 Insulating mats 23
9.3 Passageways in front of switchgear and controlgear assemblies 24
9.4 Space at the rear and passageways 24
9.5 Positions of section and distribution boards 24
10 Semiconductor converters 24
11 Secondary cells and batteries 25
11.1 Location 25
11.2 Electrical installation in secondary battery compartments 26

11.3 Protection against corrosion 26
11.4 Fixing and supports 27
11.5 Protection of circuits from secondary batteries 27
11.6 Additional requirements for valve regulated lead acid (VRLA) type batteries 27
11.7 Protection against electric shock 27
11.8 Identification labels or marking 28
12 Luminaires 28
12.1 Degree of protection and safety requirements 28
12.2 Emergency and escape lighting 29
12.3 Navigation aid system 29
13 Heating and cooking appliances 29
13.1 Guarding of combustible materials 29
13.2 Position of controlgear and switchgear 29
13.3 Mounting of space-heating appliances 29
14 Trace and surface heating 29
14.1 General 29
14.2 Trace heating cables 29
14.3 Marking 30
14.4 Protection 30
14.5 Requirements for installation in hazardous areas 30
14.6 Mechanical protection 30
14.7 Junction boxes 30
15 Control and instrumentation 30
15.1 General 30
15.2 Layout 30
15.3 Display colours 31
15.4 Protection against fluid leakage 31
15.5 Sensors 31
15.5.1 Location of sensors 31
15.5.2 Temperature sensors 31
15.5.3 Pressure sensors 31
15.5.4 Enclosure 31
15.5.5 Testing and calibration 31
15.6 Measurements and indications 31
15.6.1 Instrument similarity 31
15.6.2 Scale division 32
15.6.3 Automatic control sequence 32
15.6.4 Centralized control 32
15.7 Controls 32
15.7.1 Direction of motion 32
15.7.2 Control levers 32
15.7.3 Identification 32
15.8 Alarm system 32
16 Communication 32
17 Lightning protection 33
17.1 Protection against primary structural damage 33
17.2 Air terminals 33
17.3 Down conductors 33

17.4 Protection against secondary damage 34
18 Test of completed installation 34
18.1 Inspections and tests 34
18.2 Insulation testing instruments 35
18.3 Insulation resistance 35
18.3.1 Wiring 35
18.3.2 Generators and motors 36
18.3.3 Switchboards, section boards and distribution boards 36
18.4 Generators 36
18.5 Switchgear 36
18.6 Lighting, heating and galley equipment 37
18.7 Communication systems 37
18.8 Emergency and safety systems 37
18.9 Earthing 37
18.10 Voltage drop 37
18.11 Requirements of international conventions and regulations 37
19 Documentation 37
19.1 General 37
19.2 Equipment 37
19.3 Testing 38
19.4 Maintenance 38
Annex A (informative) Performance test 39
A.1 Switchgear 39
A.2 Generator 39
A.3 Motor 39
A.4 Circuits 40
A.5 Communication, control and alarm systems 40
A.6 Statutory requirements 40
A.7 Interference 40
A.8 Batteries 40
A.9 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 18
Figure 2 – Recommended arrangement for installation of single core cables – trefoil configuration 18
Figure B.1 – Equipment with through gland 41
Figure B.2 – Equipment for voltage above 30 V AC or 50 V DC with Ex d armour clamping gland 42
Figure B.3 – Equipment for voltage 30 V AC, 50 V DC and below with Ex d armour clamping gland – termination of instrument cable 43
Figure B.4 – Equipment for voltage above 30 V AC or above 50 V DC with Ex d armour clamping gland – termination of power cable 44
Figure B.5 – Detail of heat shrink isolation between outer braid and screen 44

Table 1 – Sizes of earth continuity conductors and equipment earthing connections 14

Table 2 – Enclosure-gland type 19
Table 3 – Location of batteries versus charging power – vented cell type 25
Table 4 – Location of batteries versus charging power– VRLA or sealed cell type 26
Table 5 – Test voltages 35

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 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

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

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.

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*