BS IEC 61892-5:2014



BSI Standards Publication

Mobile and fixed offshore units — Electrical installations

Part 5: Mobile units

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of IEC 61892-5:2014. It supersedes BS IEC 61892-5:2010 which is withdrawn.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 85170 4
ICS 29.260.99; 47.020.60; 75.180.10

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 30 November 2014.

Amendments/corrigenda issued since publication

Date	Text affected

IEC 61892-5

Edition 3.0 2014-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Mobile and fixed offshore units – Electrical installations – Part 5: Mobile units

Unités mobiles et fixes en mer – Installations électriques – Partie 5: Unités mobiles

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 47.020.60

ISBN 978-2-8322-1922-5

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 5
INTRODUCTION 7
1 Scope 8
2 Normative references 8
3 Terms and definitions 9
4 General requirements 10
4.1 Protection against flooding 10
4.2 Rotating machines 10
4.3 Conductors, equipment and apparatus 10
4.4 Main switchboards 10
4.5 Axes of rotation 11
5 Limits of inclination of the unit 11
5.1 Authority requirement 11
5.2 Machines, equipment and apparatus – General 11
5.3 Propulsion machinery 11
5.4 Emergency machinery 11
5.5 Dynamic condition 11
6 Bilge pumps 12
6.1 Power supply 12
6.2 Cables and cable connections 12
6.3 Location of starting arrangement 12
7 Navigation lights 12
7.1 General 12
7.2 Navigation lights when in operation 12
7.3 Steaming lights 12
7.4 Collision regulations 12
7.5 Power supply and monitoring systems 12
7.6 Special requirements for lights using LEDs 13
8 Steering gear 13
8.1 Power operated steering gear 13
8.2 Motors 14
8.3 Motor starters 14
8.4 Power circuits supply 14
8.5 Supply of control circuits and control systems 14
8.6 Circuit protection 15
8.7 Starting and stopping of motors for steering gear power units 15
8.8 Steering gear control systems 15
8.9 Alarms and indications 16
8.10 Rudder angle indication 16
8.11 Separation of circuits 16
8.12 Communication between navigating bridge and steering gear compartment 16
9 Electric propulsion 16
9.1 General 16
9.2 General requirements 17
9.2.1 Torque and critical speeds 17

9.2.2 Lubrication 18
9.2.3 Prime movers 18
9.3 Electromagnetic compatibility (EMC) and harmonic distortion 19
9.3.1 General 19
9.3.2 Total harmonic distortion, THD 19
9.3.3 Radio frequency interference 19
9.4 Harmonic filtering 19
9.5 Generators, motors, semiconductor converters and electric slip-couplings 20
9.5.1 Machine and equipment temperature and ventilation 20
9.5.2 Accessibility and facilities for repair *in situ* 20
9.5.3 Protection against moisture and condensate 21
9.5.4 Sudden short circuits 21
9.5.5 Overspeed of propulsion motors 21
9.5.6 Exciter sets 21
9.5.7 Semiconductor converter design data 21
9.6 Protection against moisture and condensation 22
9.7 Controlgear 22
9.7.1 Location of manoeuvring controls 22
9.7.2 Engine order systems 22
9.7.3 Operation of manoeuvring controls 22
9.7.4 Interlocking of the means of control 23
9.8 Cables and wiring 23
9.8.1 Conductors 23
9.8.2 Internal wiring 23
9.8.3 Bus-bars 23
9.9 Main and control circuits 24
9.9.1 Control 24
9.9.2 Power management system 24
9.9.3 Circuitry and components 25
9.10 Protection of the system 26
9.10.1 Protection 26
9.10.2 Instrumentation 27
9.11 Propulsion transformers 28
9.12 Testing 28
10 Dynamic positioning 28
11 Ballast systems 29
11.1 General 29
11.2 Ballast pumps 29
11.3 Control and indicating systems 29
11.4 Internal communication 30
11.5 Protection against flooding 30
12 Jacking systems 30
12.1 General 30
12.2 Design 31
12.3 Holding capacity 31
12.4 Electric motor capacity 31
12.5 Control and monitoring 31
12.6 Jacking gear motors and motor controller 32
12.6.1 General 32

12.6.2 Group installation 32
12.6.3 Overcurrent protection 32
12.6.4 Running protection 32
12.6.5 Metering 32
12.7 Testing on board 32
13 Anchoring systems 32
13.1 General 32
13.2 Anchoring arrangements 32
13.3 Control systems 33
13.4 Thruster-assisted anchoring systems (TA) 33
Annex A (informative) Enhanced system verification test (HIL test) for dynamic positioned mobile units 34
A.1 General 34
A.2 Scope of HIL testing 34
A.3 Schedule and work process 35
A.4 Requirements to control systems manufacturer 35
A.5 Documentation and approval 35
Bibliography 36

Figure 1 – Typical equipment (configuration) for unit with one or two propellers 17
Figure 2 – Typical control configuration 25

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 5: Mobile units

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 61892-5 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 2010. This edition constitutes a technical revision.

This third edition includes the following significant technical change with respect to the previous edition:

The requirement to protection against flooding has been rewritten.

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

FDIS	Report on voting
18/1424/FDIS	18/1439/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.

The requirements specified in this International Standard are based on the Code for the Construction and Equipment of Mobile Offshore Drilling Units (1989 MODU CODE) published by the International Maritime Organization (IMO), and might include additional provisions.

A list of all the 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 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

IEC 61892 forms a series of International Standards 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 used for exploration or exploitation of petroleum resources.

This part of IEC 61892 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 5: Mobile units

1 Scope

This part of IEC 61892 specifies the characteristics for electrical installations in mobile units, for use during transfer from one location to another and for use during the exploration and exploitation of petroleum resources.

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).

NOTE Attention is drawn to further requirements concerning electrical installations on such mobile offshore units contained in the MODU CODE of the International Maritime Organization (IMO).

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 60034-1*, Rotating electrical machines – Part 1: Rating and performance*

IEC 60076 (all parts)*, Power transformers*

IEC 60092-501:2013, *Electrical installations in ships – Part 501: Special features – Electric propulsion plant*

IEC 60092-504, *Electrical installations in ships – Part 504: Special features – Control and instrumentation*

IEC 60332-1-2, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame*

IEC 60332-3-22, *Tests on electric cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A*

IEC 61000-6-2:2005, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61378-1, *Converter transformers – Part 1: Transformers for industrial applications*

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

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

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