

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Electrical installations for lighting and beaconing of aerodromes – Constant current regulators**

**Installations électriques pour l'éclairage et le balisage des aérodromes – Régulateurs de courant constant**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2009 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 la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland  
Email: [inmail@iec.ch](mailto:inmail@iec.ch)  
Web: [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 corrigenda or an amendment might have been published.

- Catalogue of IEC publications: [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

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 It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

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

The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: [www.iec.ch/webstore/custserv](http://www.iec.ch/webstore/custserv)

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00

### A propos de la CEI

La Commission Electrotechnique internationale (CEI) 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 CEI

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

- Catalogue des publications de la CEI: [www.iec.ch/searchpub/cur\\_fut-f.htm](http://www.iec.ch/searchpub/cur_fut-f.htm)

Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,...). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.

- Just Published CEI: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.

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

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.

- Service Clients: [www.iec.ch/webstore/custserv/custserv\\_entry-f.htm](http://www.iec.ch/webstore/custserv/custserv_entry-f.htm)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tél.: +41 22 919 02 11  
Fax: +41 22 919 03 00

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Electrical installations for lighting and beaconing of aerodromes – Constant current regulators**

**Installations électriques pour l'éclairage et le balisage des aérodromes – Régulateurs de courant constant**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

U

ICS 29.140.50; 93.120

ISBN 978-2-88910-574-8

## CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions .....	7
4 Classification .....	7
4.1 Output current .....	7
4.2 Current steps.....	7
4.3 Ratings.....	7
5 Requirements .....	8
5.1 General .....	8
5.2 Environmental requirements .....	8
5.3 Performance requirements.....	8
5.3.1 Nominal output current range and tolerances.....	8
5.3.2 Regulation – resistive loading.....	9
5.3.3 Regulation – reactive loading .....	9
5.3.4 Efficiency.....	9
5.3.5 Power factor .....	9
5.3.6 Input voltage.....	9
5.3.7 Load matching .....	9
5.3.8 Operation .....	9
5.3.9 Control/Monitoring System .....	9
5.3.10 Output current surge limitation.....	11
5.3.11 Dynamic response .....	11
5.3.12 Output voltage limitation .....	11
5.3.13 Protective devices.....	11
5.4 Electromagnetic compatibility (EMC).....	12
5.4.1 Limits for emission.....	12
5.4.2 Output current waveform.....	12
5.4.3 Limits for immunity.....	12
5.5 Design requirements.....	12
5.5.1 Local control .....	12
5.5.2 Local indication.....	12
5.5.3 Wiring diagram .....	12
5.5.4 Mechanical design .....	12
5.5.5 Electrical design .....	13
5.5.6 Nameplate .....	14
5.5.7 Instruction manual .....	14
5.6 Protection against electric shock.....	14
5.7 Optional accessories .....	15
5.7.1 Earth fault monitor .....	15
5.7.2 Load indicator.....	15
5.7.3 Lamp fault indicator .....	15
5.7.4 Output lightning arrestors.....	16
5.7.5 Field circuit isolator.....	16
5.7.6 Non-illumination current step.....	16
5.7.7 Out of range indicator .....	16

5.7.8	Output ammeter .....	16
5.7.9	Short circuit protection .....	16
5.7.10	Serial wiring .....	17
6	Qualification and test requirements .....	17
6.1	Type tests .....	17
6.2	Routine tests .....	17
7	Tests description for tests .....	18
7.1	Visual inspection .....	18
7.2	Protection against electric shock .....	19
7.2.1	Verification of protection by enclosures .....	19
7.2.2	Verification of clearances and creepage distances .....	19
7.3	Dielectric test .....	19
7.3.1	Dielectric strength .....	19
7.3.2	Basic impulse insulation level (BIL) test for power transformer .....	19
7.4	Enclosure temperature test .....	19
7.5	Test of protective devices .....	20
7.5.1	Open circuit test .....	20
7.5.2	Overcurrent test .....	21
7.6	Operation test .....	21
7.7	Performance test .....	22
7.7.1	Regulation test .....	22
7.7.2	Efficiency testing .....	22
7.7.3	Power factor .....	23
7.7.4	Output current surge limitation .....	23
7.7.5	Dynamic response .....	23
7.7.6	Power supply interruptions and voltage dips .....	23
7.7.7	Mechanical operation test .....	23
7.7.8	Electromagnetic compatibility (EMC) .....	24
7.7.9	Lightning arrestors .....	24
7.8	Environmental tests .....	24
7.8.1	Low temperature .....	24
7.8.2	High temperature .....	25
7.9	Optional accessories .....	25
	Figure 1 – Nameplate .....	14
	Figure 2 – Open circuit test schematic diagram .....	20
	Table 1 – Standard CCR output current step pre-settings .....	8
	Table 2 – CCR remote control/monitoring functions .....	10
	Table 3 – Lamp failure indicator .....	15
	Table 4 – Type and routine tests .....	18
	Table 5 – BIL test .....	19
	Table 6 – Resistive loading test .....	22
	Table 7 – Reactive loading test .....	22

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL INSTALLATIONS FOR LIGHTING  
AND BEACONING OF AERODROMES –  
CONSTANT CURRENT REGULATORS**

## 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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 61822 has been prepared by IEC Technical Committee 97: Electrical installations for lighting and beaconing of aerodromes.

This second edition cancels and replaces the first edition published in 2002. It is a technical revision.

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

- a) revision and update of terms and definitions;
- b) addition of new paragraphs, such as "Nominal output current range and tolerances";
- c) modification of some paragraphs, such as those related to "Local control" and "Remote control";
- d) deletion of some paragraphs, in particular "Power transformers" and "Output current indicator".

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

FDIS	Report on voting
97/135/FDIS	97/139/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 committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

Withdrawn