

Electrical installations for lighting and beaconing of aerodromes — Maintenance of aeronautical ground lighting constant current series circuits

The European Standard EN 61821:2003 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 61821:2003. It is identical with IEC 61821:2002.

The UK participation in its preparation was entrusted to Technical Committee EPL/97, Aeronautical ground lighting, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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**Electrical installations for lighting and beaconing of aerodromes -
Maintenance of aeronautical ground lighting
constant current series circuits
(IEC 61821:2002)**

Installations électriques pour l'éclairage
et le balisage des aérodromes -
Maintenance des circuits série
à courant constant pour le balisage
aéronautique au sol
(CEI 61821:2002)

Elektrische Anlagen für Beleuchtung
und Befeuerung von Flugplätzen -
Wartung von Konstantstrom-
Serienstromkreisen
für Flugplatzbefeuerungsanlagen
(IEC 61821:2002)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 97/77/FDIS, future edition 1 of IEC 61821, prepared by IEC TC 97, Electrical installations for lighting and beaconing of aerodromes, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61821 on 2002-12-03.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2003-09-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-12-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61821:2002 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

This International Standard contains the management, safety and procedural requirements specific to the maintenance of an aeronautical ground lighting (AGL) constant current series circuit and has taken into consideration existing national standards, requirements and practices. The maintenance activities are required to ensure that the AGL constant current series circuit continues to meet the operational requirements and minimise the occurrence of operational failures.

To conform to this International Standard it should be demonstrated to the relevant bodies that the requirements have been satisfied and therefore that the clause objective(s) has(have) been met.

NOTE Examples of relevant bodies would include the following:

- certification and licensing authorities;
- safety regulators;
- notified bodies for international or European directives;
- national standards bodies.

ELECTRICAL INSTALLATIONS FOR LIGHTING AND BEACONING OF AERODROMES – MAINTENANCE OF AERONAUTICAL GROUND LIGHTING CONSTANT CURRENT SERIES CIRCUITS

1 Scope

This International Standard applies to the maintenance of AGL constant current series circuits.

This International Standard

- covers constant current series circuits for AGL installed at aerodromes and heliports;
- concentrates on providing the safety requirements for the maintenance of an AGL constant current series circuit. It is recognised that AGL constant current series circuits of different design characteristics and parameters are in existence;
- is mainly concerned with safety to persons by specifying the rules and fundamental principles for the maintenance of AGL constant current series circuits;
- is not intended to apply to AGL primary series circuits supplied directly from a mains constant voltage source;
- is not intended to be used for public street lighting, roadway lighting or any other installation requiring the use of constant current series circuits.

2 Normative references

The following referenced documents are indispensable for the application 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 60903:1988, *Specification for gloves and mitts of insulating material for live working*

IEC/TS 62143, – *Electrical installations for the lighting and beaconing of aerodromes – Aeronautical ground lighting systems – Guidelines for the development of a safety life-cycle methodology*¹⁾

IEC/ISO Guide 51:1999, *Safety aspects – Guidelines for their inclusion in standards*

3 Definitions

For the purpose of this International Standard the following definitions apply.

¹⁾ To be published.

3.1

aerodrome authority

organisation accountable for the safety and security of persons, aircraft operations and facilities at an aerodrome

3.2

AGL constant current series circuit

apparatus configured as an electrical circuit designed to produce and operate with a constant current, independent of specified load variations, in order to provide a specified light for aeronautical purposes

3.3

AGL operator

person responsible for the control of the AGL to permit the safe movement of aircraft

3.4

caution sign

non-metallic safety sign attached to equipment conveying a warning against interference with such equipment

3.5

constant current regulator (CCR)

apparatus which produces a current output at a constant r.m.s. value independent of variations in the constant current series circuit load, input voltage and service conditions as specified

3.6

contractor

organisation or person(s) given a written order to provide a service or undertake specified work

3.7

dead

free from any electrical connection to a source of potential difference and from electric charge; not having a potential different from that of the earth

3.8

earthed

connected to the general mass of earth in such a manner as to ensure at all times an immediate discharge of electrical energy without harm

3.9

electrical equipment

anything used, intended to be used or installed for use, to generate, provide, transmit, transform, rectify, convert, conduct, distributes, control, store, measure or use electrical energy

3.10

harm

physical injury or damage to the health of people either directly, or indirectly, as a result of damage to property or to the environment.

[ISO/IEC Guide 51, 3.3, modified]

3.11

hazard

potential source of harm.

NOTE The term includes hazards to persons arising within a short time scale (for example, fire and explosion) and also those that have a long-term effect on a person's health (for example, release of a toxic substance).

[ISO/IEC Guide 51, 3.5, modified]

3.12

hazardous event

occurrence, with possible hazardous consequences, arising as the result of a hazardous condition

3.13

hazard sign

non-metallic safety sign that conveys a warning against risk of harm

3.14

isolate

disconnect and separate electrical equipment from the normal source(s) of electrical energy in such a way that the disconnection and separation is secure

3.15

live

electrically connected to a source of electricity or which has acquired a charge by other means

3.16

maintenance

act of diagnosing and physically repairing, or preventing, equipment failures

3.17

personal protective equipment

equipment used to protect persons from harm in the working environment

NOTE Personal protective equipment includes such items as special tools, protective clothing, insulating screening, safety harnesses and safety signs.

3.18

prove dead

demonstrate with the use of test equipment that no electrical potential liable to cause harm is present

3.19

risk

combination of the probability of occurrence of harm and the severity of that harm

[ISO/IEC Guide 51, 3.2]

3.20

risk assessment

1. systematic quantitative assessment of the magnitude of the threat to safety induced by the accumulation of controlled and unresolved residual hazards;
2. integrated analysis of the risks inherent in a product, system or facility and their significance in an appropriate context

3.21**test equipment**

equipment to undertake particular tests, that is suitable for the use for which it is provided, that is maintained in a condition suitable for that use, and that is properly used

3.22**test/testing (of equipment)**

1. providing a sequence of operations or the measuring of electrical characteristics of live electrical equipment (for example, diagnostic testing of faulty equipment);
2. applying voltages, currents or signals for the purposes of providing insulation, continuity or other characteristic of isolated electrical equipment (for example, before a permanent electrical installation is energised from the normal source(s) of electrical energy)

3.23**work/working (on electrical equipment)**

installing, dismantling, assembling, maintaining or repairing of electrical equipment

4 Competence of persons**4.1 Objective**

The objective of the requirements of this clause is to ensure that persons who have responsibility for any activity, or are directly engaged in the maintenance of AGL constant current series circuits are competent to discharge those duties or perform those tasks.

NOTE It is recommended that the appropriate administration or aerodrome authority encourage the development of a formal and structured competency training programme(s). The training programme(s) should consist of multiple tiers that enhance progressively a person's skills and ensure a recognised level of competency for those persons who have satisfactorily completed the programme(s).

4.2 Requirements

In accordance with national legislation, all persons involved in any activity, including management and maintenance activities, shall have the appropriate and verifiable training, technical knowledge, experience and qualifications relevant to the specific duties they have to perform. In particular, where involved in work on constant current series circuits, they shall be knowledgeable of the specific risks and the safety procedures involved in the work. The training, experience and qualifications of all persons involved in any activity shall be justified taking into account all the relevant competence factors. The justification shall be recorded in appropriate documentation.

NOTE The following competence factors should be addressed when assessing and justifying the competence of persons carrying out their duties:

- engineering appropriate to the application area;
- engineering appropriate to the technology (for example, mechanical, electrical/electronic/software engineering);
- safety engineering appropriate to the technology;
- knowledge of the legal and safety regulatory framework;
- knowledge of the operational aspects related to the AGL system at the aerodrome;
- the consequences in the event of a failure of a constant current series circuit;
- the consequences of failure to adhere to safety procedures when working on constant current series circuits;
- the novelty of the design, design procedures or application;
- previous experience relevant to the specific duties to be performed and the technology being employed;
- relevance of qualifications to the specific duties performed.