

Operation of electrical installations

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British Standard

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- Association of Consulting Engineers
- British Cable Makers Confederation
- Electrical Contractors Association
- Electricity Association
- Health and Safety Executive
- Transmission and Distribution Association (BEAMA Limited)

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National foreword

This British Standard has been prepared by Technical Committee PEL/99, and is the English language version of EN 50110-1:1996, published by the European Committee for Electrotechnical Standardization (CENELEC).

This British Standard is published under the direction of the Electrotechnical Sector Board whose Technical Committee PEL/99 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 25 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Operation of electrical installations

Exploitation des installations électriques

Betrieb von elektrischen Anlagen

This European Standard was approved by CENELEC on 1996-07-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

This European Standard was prepared by the CENELEC BT Task Force 62-3 "Operation of electrical installations". The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50110-1 on 1996-07-02.

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) 1997-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-06-01

The purpose of this European Standard is to provide, in a convenient form, general requirements for the safe operation of and work activity on, with or near electrical installations.

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Introduction

There are many national laws, standards and internal rules dealing with the matters coming within the scope of this standard and these practices have been taken as a basis for this work.

The standard consists of two parts. The first part EN 50110-1 contains Minimum Requirements valid for all CENELEC countries and some additional informative annexes dealing with safe working. The second part EN 50110-2 consists of a set of normative annexes (one per country) which specify either the present safety requirements or give the national supplements to these Minimum Requirements.

This concept is believed to be a first decisive step to the gradual alignment in Europe of the safety levels associated with the operation of, work activity on, with, or near electrical installations. This document acknowledges the present different national requirements for safety. The intention is, over the course of time, to create a common level of safety.

Even the best rules and procedures are of no value unless all persons working on, with, or near electrical installations are thoroughly conversant with them and with all legal requirements and comply strictly with them.

1 Scope

This standard is applicable to all operation of and work activity on, with, or near electrical installations. These installations operate at voltage levels from and including extra-low voltage up to and including high voltage.

This latter term includes those levels referred to as medium and extra-high voltage.

These electrical installations are designed for the generation, transmission, conversion, distribution, and use of electrical power. Some of these electrical installations are permanent and fixed, such as a distribution installation in a factory or office complex, others are temporary, such as on construction sites and others are mobile or capable of being moved either whilst energized or whilst not energized nor charged. Examples are electrically driven excavating machines in quarries or open-cast coal sites.

This standard sets out the requirements for the safe operation of and work activity on, with, or near electrical installation. These requirements apply to operational, working and maintenance procedures. It applies to all electrical work activities as well as non-electrical work activities such as building work near to overhead lines or underground cables.

This standard does not apply to ordinary persons when using installations and equipment, provided that the installations and equipment are designed and installed for use by ordinary persons and they comply with relevant standards.

This standard has not been developed specifically to apply to the electrical installations listed below.

However, it is recommended that persons responsible for such installations should use this standard as a guide to the aims to be achieved in setting out their rules and procedures:

- on any aircraft and hovercraft moving, under its own power, (these are subject to International Aviation laws which take precedence over National laws in these situations);
- on any sea going ship moving under its own power, or under the direction of the master, (these are subject to International Marine laws which take precedence over National laws in these situations);
- electronic telecommunications and information systems;
- electronic instrumentation, control and automation systems;
- at coal or other mines;
- on off-shore installations subject to International Marine laws;
- on vehicles;
- on electric traction systems;
- on experimental electrical research work.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revisions. For undated references the latest edition of the publication referred to applies.

EN 60529	1991	Degree of protection provided by enclosures (IP Code) (IEC 529:1989, modified)
ENV 50196	1995	Live working — Required insulation level and related air distances — Calculation method
HD 384	series	Electrical installation of buildings. (IEC 364, modified)
International Electrotechnical Vocabulary:		
IEC 50(151)	1978	Electrical and magnetic devices
IEC 50(601)	1985	Generation, transmission and distribution of electricity — General
IEC 50(604)	1987	Generation, transmission and distribution of electricity — Operation
IEC 50(826)	1982	Electrical installations of buildings

3 Definitions

For the purposes of this standard, the following definitions apply. Refer to the International Electrotechnical Vocabulary for other terms not defined below.

3.1 General

3.1.1

electrical installation

this includes all the electrical equipment which provides for the generation, transmission, conversion, distribution and use of electrical energy. It includes energy sources such as batteries, capacitors and all other sources of stored electrical energy

3.1.2

operation

all activities including work activities necessary to permit the electrical installation to function. These activities include such matters as switching, controlling, monitoring and maintenance as well as both electrical and non-electrical work

3.1.3

risk

a combination of the probability and the degree of the possible injury or damage to health of a person exposed to a hazard or to hazards

3.1.4

electrical hazard

a source of possible injury or damage to health in presence of electrical energy from an electrical installation

3.1.5

electrical danger

risk of injury from an electrical installation

3.1.6

injury (electrical)

death or personal injury from electric shock, electric bum, arcing, or from fire or explosion initiated by electrical energy caused by any operation of an electrical installation

3.2 Personnel, organization and communication

3.2.1

nominated person in control of a work activity

that person who has been nominated to be the person with direct management responsibility for the work activity. Parts of this responsibility may be delegated to others as required

3.2.2

nominated person in control of an electrical installation

that person who has been nominate to be the person with direct management responsibility for the electrical installation. Parts of this responsibility may be delegated to others as required

3.2.3

skilled person

a person with relevant education and experience to enable him or her to avoid dangers which electricity may create [IEV 826-09-01 modified]

3.2.4

instructed person

a person adequately advised by skilled persons to enable him or her to avoid dangers which electricity may create [IEV 826-09-02 modified]

3.2.5

ordinary person

a person who is neither a skilled person nor an instructed person [IEV 826-09-03]

3.2.6

notification

messages or instructions which are either verbal or in Writing associated with operation of any electrical installation

3.3 Working zone

3.3.1

work location

the site(s), place(s) or area(s) where a work activity is to be, ist being, or has been carried out

3.3.2

vicinity zone

a limited space surrounding the live working zone (see Figure 1 and Figure 2)

3.3.3

live working zone

a space around live parts in which the insulation level to prevent electrical danger is not assured when encroaching it without protective measures (see Figure 1 and Figure 2)

3.4 Working

3.4.1

work activity

any form of electrical or non-electrical work where there is the possibility of an electrical hazard

3.4.2

electrical work

work on, with or near an electrical installation such as testing and measurement, repairing, replacing, modifying, extending, erection and inspection

3.4.3

non-electrical work

work near to an electrical installation such as construction, excavation, cleaning, painting, etc.