Irish Standard
I.S. EN 50536:2011

Protection against lightning - Thunderstorm warning systems

I.S. EN 50536:2011

Incorporating amendments/corrigenda issued since publication:

EN 50536:2011/AC:2011
EN 50536:2011/A1:2012

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Corrigendum to EN 50536:2011

English version

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1) In 1.1, replace "usefulness" with "necessity".

2) In 1.2, replace "usefulness" with "necessity".

3) In 1.2, replace the last paragraph with the following:

"The following aspects are outside of this European Standard:

a) lightning protection which is covered in their corresponding European and National standards and regulations;

b) other thunderstorm related phenomena such as rain, hail, wind, etc.;

c) satellite and radar thunderstorm detection techniques;

d) this European Standard does not address any details on lightning and/or storm electrification hazard preventive actions."

4) In 9.2.2, Table 3, row 1, replace “(according to EN 62305 series or other EN standards)” with “(according to EN 62305 series or other standards)”.

5) In Table C.1, row 1, replace “(according to EN 62305 series or other EN standards)” with “(according to EN 62305 series or other standards)”.

6) In C.1.3, replace “...after applying lightning protection according to EN 62305 series or other EN standards is not acceptable” with “...after applying lightning protection according to EN 62305 series or other standards is not acceptable”.

7) In Table C.7, row 1, replace "(according to EN 62305 series)" with "(according to EN 62305 series or other standards)".

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June 2011

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I.S. EN 50536:2011

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50536/A1

October 2012

ICS 07.060; 91.120.40

English version

Protection against lightning - Thunderstorm warning systems

Protection contre la foudre - Dispositif de détection d'orage

Blitzschutz - Gewitterwarnsysteme

This amendment A1 modifies the European Standard EN 50536:2011; it was approved by CENELEC on 2012-09-19. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 50536:2011/A1:2012 E

Foreword

This document (EN 50536:2011/A1:2012) has been prepared by CLC/TC 81X "Lightning protection".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-09-19
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2015-09-19

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

I.S. EN 50536:2011

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50536

June 2011

ICS 07.060

English version

Protection against lightning - Thunderstorm warning systems

Protection contre la foudre - Dispositif de détection d'orage

Blitzschutz - Gewitterwarnsysteme

This European Standard was approved by CENELEC on 2011-02-14. 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, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 50536:2011 E

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 81X, Lightning protection.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50536 on 2011-02-14.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates are proposed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-02-14
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2014-02-14

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Introduction

Natural atmospheric electric activity and in particular cloud-to-ground lightning poses a serious threat to living beings and property.

Every year severe injuries and even deaths of humans are caused as a direct or indirect result of lightning:

- sport, cultural and political events attracting large concentrations of people may have to be suspended and evacuated in the case of a risk of thunderstorm;
- power outages and unplanned interruptions of production processes;
- the wider use of electrical components that are sensitive to the effects of lightning (in industry, transportation and communication) has led to a steady increase in the number of accidents per year. In order to reduce this number of accidents and important material losses, it may be necessary in some circumstances, to disconnect certain equipment from any incoming installations;
- thunderstorms could interrupt all kinds of traffic (people, energy, information, etc.);
- activities with an environmental risk, for example: handling of sensitive, inflammable, explosive or chemical products.

Lightning is also one of the causes of fires.

During the last decades, technical systems and systems devoted to real-time monitoring of natural atmospheric electric activity and lightning have experienced an extraordinary development. These systems can provide high quality and valuable information in real-time of the thunderstorm occurrence, making it possible to achieve information which can be extremely valuable if coordinated with a detailed plan of action.

Although this information allows the user to adopt anticipated temporary preventive measures, it should be noted, however, that all the measures to be taken based on monitoring information are the responsibility of the system user according to the relevant regulations. The effectiveness will depend largely on the risk situation involved and the planned decisions to be taken. This document shows a list of possible actions that is, however, merely of an informative nature.

It should be pointed out that lightning and thunderstorms, as any natural phenomenon, are subject to statistical uncertainty. This means that it is not possible to achieve 100 % precise information on when and where lightning will strike.

Standards dealing with lightning protection methods to limit lightning damages already exist. They do not cover other potentially dangerous situations related to thunderstorms and lightning, that can be dynamically prevented or reduced by temporary measures whose origin is a preventive alert provided by a detection system.

1 General

1.1 Object

This European Standard provides information on the characteristics of thunderstorm warning systems and information for the evaluation of the necessity of lightning real time data and/or storm electrification data in order to implement lightning hazard preventive measures.

1.2 Scope

This European Standard provides the basic requirements of sensors and networks collecting accurate data of the relevant parameters informing in real-time about lightning tracking and range. It describes the application of the data collected by these sensors and networks in the form of warnings and historical data.

This European Standard applies to the use of information from thunderstorm warning systems (which are systems or equipment which provide real-time information) on atmospheric electrical activity in order to monitor for preventive means.

The scope of this document is providing:

- a general description of the available lightning and storm electrification hazard warning systems;
- a classification of thunderstorm detection devices and properties;
- guidelines for alarming methods;
- a procedure to determine the thunderstorm information necessity;
- some examples of possible preventive actions (only for information).

A non-exhaustive list of activities to which this European Standard might apply is given below:

- people in open areas: maintenance people, labour, sports or other open-air activities, competitions, crowded events, agricultural activities, farms and fisheries;
- wind farms, larger solar power systems, power lines, etc.;
- occupational health and safety prevention;
- safeguard sensitive equipment: computer systems, electric or electronic systems, emergency systems, alarms and safety;
- prevention of losses in operations and industrial processes;
- prevention of serious accidents involving dangerous substances (e.g. flammable, radioactive, toxic, and explosive);
- prevention in determined environments or activities with special danger of electrostatic discharges (e.g. space and flight vehicle operations);
- operations in which the continuity of the basic services is needed to be guaranteed (e.g. telecommunications, the generation, transport and distribution of energy, sanitary services and emergency services);
- infrastructures: ports, airports, railroads, motorways and cableways;
- civil defence of the environment: forest fires, land slide and floods;
- managing traffic (e.g. airplanes) or wide networks (e.g. power lines, telecommunication lines) may also benefits from having early detection of thunderstorms.

The following aspects are outside of this European Standard:

a) lightning protection which is covered in their corresponding European and National standards and regulations;

b) other thunderstorm related phenomena such as rain, hail, wind, etc.;

c) satellite and radar thunderstorm detection techniques;

d) this European Standard does not address any details on lightning and/or storm electrification hazard preventive actions.

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.

EN 62305 series, *Protection against lightning* (IEC 62305 series)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
alarm
information indicating that the target is potentially subject of being affected by thunderstorms and the accompanying lightning related events

3.2
cloud flash
lightning flash that never reaches the ground

NOTE 1 It can be an intra-cloud, a cloud-to-cloud or a cloud-to-air flash.

NOTE 2 By extension the term “intra-cloud” (IC) lightning sometimes encompasses the whole cloud flash family.

3.3

lightning flash to earth
CG flash
electrical discharge of atmospheric origin between cloud and earth consisting of one or more strokes

[EN 62305-1:2011]

3.4
coverage area
CA
area where a given warning equipment has a sufficient detection efficiency and/or accuracy to elaborate a warning

3.5
detection efficiency
DE
percentage of actual lightning discharges that are detected and located by a sensor or a network

NOTE As cloud to ground flashes are often composed of several strokes there is a difference between flash detection efficiency (DE_f) and stroke detection efficiency (DE_s). A flash is reported (detected) if at least one stroke (first or subsequent) is detected and therefore DE_f is always equal or higher than DE_s.