

# Cabled distribution systems for television, sound and interactive multimedia signals —

## Part 1: Safety requirements

The European Standard EN 50083-1:1993 has the status of a  
British Standard

ICS 33.060.40

# Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

|         |                |
|---------|----------------|
| Austria | Italy          |
| Belgium | Luxembourg     |
| Denmark | Netherlands    |
| Finland | Norway         |
| France  | Portugal       |
| Germany | Spain          |
| Greece  | Sweden         |
| Iceland | Switzerland    |
| Ireland | United Kingdom |

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| 9972     | May 1998      | Indicated by a sideline in the margin |
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|          |               |                                       |

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## National foreword

This British Standard has been prepared under the direction of the Electronic Equipment Standards Policy Committee and is the English language version of EN 50083-1:1993 *Cabled distribution systems for television, sound and interactive multimedia signals — Part 1: Safety requirements* including amendment A1:1997 and A2:1997, published by the European Committee for Electrotechnical Standardization (CENELEC).

It forms Part 1 of a multi-Part standard on cabled distribution systems for television and sound signals.

Other Parts to follow will cover terms and definitions, electromagnetic compatibility for components and systems, active coaxial wideband distribution equipment, passive coaxial wideband distribution equipment, headend equipment, fibre optic components, system performance, digital cable television equipment for coaxial cabled distribution systems, and digital cable television equipment for optical cabled distribution systems.

The foreword of EN 50083-1 makes reference to the “date of withdrawal”, dow, of the relevant national standard.

In this case, the relevant national standard is BS 6513-6:1987, which ceased to be applicable to safety requirements for wideband cabled distribution systems within the scope of EN 50083-1 on 1994-03-01. Certification and marks will not be awarded after this date with respect to BS 6513-6:1987. However, for products which have conformed to BS 6513-6:1987, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-03-01.

### Amendment 2

In Annex C, the special national condition for France regarding subclause 5.2.4 has been deleted.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 28, an inside back cover 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.

Descriptors: Telecommunications, television broadcasting, sound broadcasting, communication cables, television systems, safety, accident prevention, equipment protection, protection against electric shock, fire protection, lighting protection

English version

# Cabled distribution systems for television, sound and interactive multimedia signals Part 1: Safety requirements

(includes amendments A1:1997 and A2:1997)

Systèmes de distribution par câbles destinés  
aux signaux de radiodiffusion sonore, de  
télévision et multimédias interactifs  
Partie 1: Règles de sécurité  
(inclut les amendements A1:1997 et A2:1997)

Kabelverteilssysteme für Fernseh-, Ton- und  
interaktive Multimedia-Signale  
Teile 1: Sicherheitsanforderungen  
(enthält Änderungen A1:1997 und A2:1997)

This European Standard was approved by CENELEC on 9 March 1993. 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

The present European Standard was prepared by the CENELEC Technical Committee TC 109, Cabled distribution systems for television and sound signals. It was submitted to the CENELEC formal vote in September 1992 and was approved by CENELEC as EN 50083-1 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-03-01
- latest date of withdrawal of conflicting national standards (dow) 1994-03-01

For products which have complied with the relevant national standard before 1994-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-03-01.

Annexes designated “normative” are part of the body of the standard. Annexes designated “informative” are given only for information. In this standard, Annex A and Annex C are normative and Annex B and Annex D are informative.

## Foreword to amendment A1

This amendment to the European Standard EN 50083-1:1993 was prepared by Technical Committee CENELEC TC 209, Cabled distribution systems for television, sound and interactive multimedia signals.

The text of the draft was submitted to the Unique Acceptance Procedure (UAP) and was approved by CENELEC as amendment A1 to EN 50083-1 on 1996-12-09.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1997-09-01

For products which have complied with EN 50083-1 before 1997-09-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2002-09-01.

## Foreword to amendment A2

At the request of the French electrotechnical committee, a draft for an amendment to EN 50083-1:1993 was submitted to the CENELEC members for acceptance in August 1997.

The text of the draft was accepted by CENELEC as amendment A2 to EN 50083-1:1993 on 1997-10-28.

The following dates were fixed:

- latest date by which the existence of the amendment has to be announced at national level. (doa) 1998-01-28
- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement. (dop) 1998-04-28

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## 1 Scope

### 1.1 General

Standards of the EN 50083 series deal with cabled distribution systems for television, sound and interactive multimedia signals including equipment

- for headend-reception, processing and distribution of sound and television signals and their associated data signals; and
- for processing, interfacing and transmitting all kinds of interactive multimedia signals,

using all applicable transmission media.

They cover all kinds of systems such as:

- CATV-systems;
- MATV- and SMATV-systems;
- individual receiving systems;

and all kinds of equipment installed in such systems.

The extent of these standards is from the antennas, special signal source inputs to the headend or other interface points to the system up to the system outlet or the terminal input, where no system outlet exists.

The standardization of any user terminals (i.e. tuners, receivers, decoders, multimedia terminals etc.) is excluded.

### 1.2 Specific scope of this part 1

This standard deals with the safety requirements applicable to fixed sited systems and equipment as described in the general part of this scope. As far as applicable it is also valid for mobile and temporarily installed systems e.g. caravans.

Additional requirements may apply, for example in relation to:

- electricity distribution systems (overhead or underground);
- other telecommunication services distribution systems;
- water distribution systems;
- gas distribution systems;
- lightning protection systems.

This standard is intended to provide specifically for the safety of the system, personnel working on it, subscribers and subscriber equipment. It deals only with safety aspects and is not intended to define a standard for the protection of equipment used in the system.

## 2 Terms, definitions, symbols and abbreviations

For the purposes of this standard, the following definitions apply:

### 2.1 Terms and definitions

#### 2.1.1

#### **cabled distribution system (for television and sound signals)**

the general overall term used to define CATV-systems, MATV-systems, SMATV-systems and individual receiving systems

#### 2.1.2

#### **CATV-system or Community Antenna Television system**

a system designed to provide sound and television signals to communities

#### 2.1.3

#### **MATV-system or Master Antenna Television system**

a system designed to provide sound and television signals to households in one or more buildings

#### 2.1.4

#### **individual receiving system**

a system designed to provide sound and television signals to an individual household

#### 2.1.5

#### **headend**

equipment which is connected between receiving antennas or other signal sources and the remainder of the cabled distribution system, to process the signals to be distributed

#### 2.1.6

#### **receiving antenna**

a device with the proper electrical characteristics that intercepts desired signals in the atmosphere and transfers these to the remainder of the cabled distribution system

#### 2.1.7

#### **feeder**

a transmission path forming part of a cabled distribution system. Such a path may consist of a metallic cable, optical fibre, waveguide, or any combination of them. By extension the term is also applied to paths containing one or more radio links

#### 2.1.8

#### **spur feeder**

a feeder to which subscriber taps or looped system outlets are connected

**2.1.9  
amplifier**

a device to compensate for attenuation

**2.1.10  
splitter (spur unit)**

a device in which the signal power at the (input) port is divided equally or unequally between two or more (output) ports

NOTE Some forms of this device may be used in the reverse direction for combining signal energy.

**2.1.11  
subscriber tap**

a device for connecting a subscriber feeder to a spur feeder

**2.1.12  
system outlet**

a device for interconnecting a subscriber feeder and a receiver lead

**2.1.13  
receiver lead**

a lead which connects the system outlet to the subscriber equipment

NOTE A receiver lead may include filters and balun transformers in addition to the cable.

**2.1.14  
subscriber feeder**

a feeder connecting a subscriber tap to a system outlet or, where the latter is not used, directly to the subscriber equipment

**2.1.15  
subscriber equipment**

equipment at the subscriber premises such as receivers, tuners, decoders, video recorders

**2.1.16  
transfer point**

an interface between the cabled distribution network and the building's internal network, each of which may be separately owned. The transfer point may contain a voltage dependent device and/or a galvanic isolator

**2.1.17  
galvanic isolator**

a device providing electrical isolation below a certain frequency range

**2.1.18  
surge suppressor [IEC 1024-1]**

a device designed to limit the surge voltage between two parts within the space to be protected, such as a spark gap, surge diverter or semiconductor device

**2.1.19  
attenuation**

the attenuation of any system or equipment is the decibel ratio of the input power to the output power

**2.1.20  
earthing terminal**

the connection point by means of which the earthing or grounding of a conducting part of an equipment is accomplished

**2.1.21  
earth electrode [IEV 826-04-02]**

a conductive part or a group of conductive parts in intimate contact with and providing an electrical connection with earth

**2.1.22  
protective conductor (symbol PE)  
[IEV 826-04-05]**

a conductor required by some measures for protection against electric shock for electrically connecting any of the following parts:

- exposed conductive parts;
- extraneous conductive parts;
- main earthing terminal;
- earth electrode;
- earthed point of the source or artificial neutral.

**2.1.23  
earthing conductor [IEV 826-04-07]**

a protective conductor connecting the main earthing terminal or bar to the earth electrode

**2.1.24  
neutral conductor (symbol N) [IEV 826-01-03]**

a conductor connected to the neutral point of a system and capable of contributing to the transmission of electrical energy

**2.1.25  
equipotential bonding conductor  
[IEV 826-04-10]**

a protective conductor for ensuring equipotential bonding

**2.1.26  
equipotential bonding [IEV 826-04-09]**

electrical connection putting various exposed conductive parts and extraneous conductive parts at a substantially equal potential

**2.1.27  
equipotential bonding bar**

a bar to which e.g. extraneous-conductive-parts (see IEV 826-03-03), metal-sheath of electrical power and telecommunication cables and other cables can be bonded

**2.1.28****lightning protection system (LPS)** [IEC 1024-1]

the complete system used to protect a space against the effects of lightning. It consists of both external and internal lightning protection systems

NOTE In particular cases, an LPS may consist of an external LPS or an internal LPS only.

**2.1.29****“natural” component of an LPS** [IEC 1024-1]

a component which performs a lightning protection function but is not installed specifically for that purpose

NOTE Some examples of the use of this term are as follows:

- “natural” air-termination;
- “natural” down-conductor;
- “natural” earth electrode.

**2.1.30****earth-termination system** [IEC 1024-1, modified]

that part of an external earthing system which is intended to conduct and disperse current in the earth

**2.1.31****metal installation** [IEC 1024-1]

extended metal items in the space to be protected which may form a path for lightning current such as pipe-work, staircases, elevator guide rails, ventilation, heating and air conditioning ducts and interconnected reinforcing steel

**2.1.32****safety distance** [IEC 1024-1]

the minimum distance between two conductive parts within the space to be protected between which no dangerous sparking can occur

**2.1.33****main earthing terminal; main earthing bar** [IEV 826-04-08]

a terminal or bar provided for the connection of protective conductors, including equipotential bonding conductors and conductors for functional earthing if any, to the means of earthing

**2.1.34****SMATV-system; Satellite Master Antenna Television distribution system**

a system designed to provide sound and television signals received by satellite receiving antenna eventually combined with terrestrial TV and/or radio signals, to households in one or more adjacent buildings

**2.2 Symbols**

Under consideration

**2.3 Abbreviations**

|             |                                              |
|-------------|----------------------------------------------|
| a.c., AC    | alternating current                          |
| CATV        | Community Antenna Television (system)        |
| d.c., DC    | direct current                               |
| LPS         | lightning protection system                  |
| MATV        | Master Antenna Television (system)           |
| r.f., RF    | radio frequency                              |
| r.m.s., RMS | root mean square                             |
| SMATV       | Satellite Master Antenna Television (system) |
| TV          | television                                   |

NOTE 1 The abbreviations with small letters belong to EN 50083-1:1993; since 1995 abbreviations were changed in all new parts of EN 50083, as well as in all amendments to former parts of EN 50083, to capital letters in accordance with practical use.

NOTE 2 Only the abbreviations used in the English version of this part of EN 50083 are mentioned in this subclause. The German and French versions of this part may use other abbreviations. Refer to 2.3 of each language version for details.

**3 General requirements**

The cabled distribution system shall be so designed, constructed and installed as to present no danger, either in normal use or under any single fault condition, to subscribers, personnel working on or externally inspecting the system, or to any other person, providing particularly:

- personal protection against electric shock;
- personal protection against physical injury;
- protection against fire.

For further details see HD 384 series.

NOTE For service and operation conditions the above does not apply to trained, authorized personnel working on the equipment, who may be exposed to live parts of the equipment by the removal of protective covers.

**3.1 Mechanical**

All parts of the system shall be so constructed that there is no danger of physical injury from contact with sharp edges or corners.

**3.2 Access**

A standard test finger shall not make contact with any live part or parts of the system which are accessible to the general public without first removing a protective cover by the use of a tool. The standard test finger is defined in EN 60065.

**3.3 Laser radiation**

If equipment embodying laser products is used, special attention has to be paid to radiation safety. Refer to EN 60825-1 for requirements and recommendations.