INTERNATIONAL STANDARD

IEC 60728-11

1997

AMENDMENT 1
2000-10

Amendment 1

Cabled distribution systems for television and sound signals –

Part 11: Safety

Amendement 1

Systèmes de distribution par câbles destinés aux signaux de radiodiffusion sonore et de télévision –

Partie 11: Sécurité

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FOREWORD

This amendment has been prepared by subcommittee 100D: Cabled distribution systems, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

FDIS	Report on voting
100/159/FDIS	100/181/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this publication will remain unchanged until 2003. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this amendment may be issued at a later date.

Page 3

CONTENTS

Delete :

13 Laser radiation

Add:

Annex A (informative) Symbols

Annex B (informative) Abbreviations

Bibliography

Page 9

FOREWORD

Delete the second dashed item: "– 6.2: Due to electrical earthing conditions…"

Page 13

1 Scope

Replace the existing text of this clause by the following new text:

Standards of the IEC 60728 series deal with cabled distribution systems for television, sound and interactive multimedia signals including equipment

- for head-end 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 scope of these standards extends from antennas and special signal source inputs to the head-end or other interface points, to systems as a whole, up to system outlets or terminal inputs, where no system outlet exists.

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

This part of IEC 60728 deals with the safety requirements applicable to fixed sited systems and equipment as described above. As far as applicable, it is also valid for mobile and temporarily installed systems, for example caravans.

Additional requirements may apply, for example in relation to:

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

Add, to the existing list of normative references, the title of the following standard:

IEC 60825-2:1993, *Safety of laser products – Part 2: Safety of optical fibre communication systems*

Page 15

3 Definitions

Replace definition 3.1 by the following new definition:

3.1
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

Page 21

Add the following new definition:

3.34
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

Page 23

4 General requirements

4.3 Laser radiation

Replace the existing text by the following new text:

If equipment embodying laser products is used, special attention shall be paid to radiation safety. Refer to IEC 60825-1 and IEC 60825-2 for requirements and recommendations.

6 Equipotential bonding and earthing

6.1 General requirements

Replace the second paragraph by the following new text:

These bonding requirements are intended to protect only the cabled system and shall not be considered to provide protection against electric shock (hazardous body currents) from electrical installations.

6.2 Equipotential bonding mechanisms

Replace, on page 25, the paragraph directly after note 2 by the following new text:

When changing or removing distribution equipment or coaxial cable, care shall be taken to avoid leakage currents from the subscriber equipment that can cause overvoltages between the interrupted parts (inner and/or outer conductors) by opening the loop. Provision shall be made to maintain continuity of the outer/inner conductor system while units are changed or removed to avoid electric shock (hazardous body currents). An example is shown in figure 6.

Page 27

7 Mains-supplied equipment

7.1 Equipment

Replace the first paragraph by the following new text:

The devices used in a cabled distribution system shall meet the requirements of IEC 60065, class II equipment.

Only where the equipment supply is protected by a residual leakage detector and there is no direct connection between the neutral supply and the protective earth, can class I equipment be used.

NOTE If different potentials build up between the protective conductor and the equipotential bonding terminal, for example in older buildings, the balancing currents shall not produce excessive heat.

8 Network powering of the cabled distribution system

8.1 Line-powering

Add the following new subclause heading 8.1.1 immediately after subclause 8.1 heading:

8.1.1 Maximum allowed line-powering voltages

Replace the first sentence of new subclause 8.1.1 (formerly 8.1) by:

The line-powering voltage between the inner and outer conductors of the feeder cable shall not exceed 65 V RMS and 120 V DC.

Add new subclause 8.1.2 as follows:

8.1.2 General provisions for equipment

The equipment shall be so designed and constructed that no dangerous current can flow under normal operating or single-fault conditions.

Page 29

9 Protection against contact and proximity to electric power distribution systems

Replace the last paragraph by the following new text:

For systems carrying voltages of more than 1 kV, the distance shall be at least 3 m. The cabled distribution system shall not cross over in open air any power distribution system carrying voltages of more than 1 kV.

Add, after the last paragraph, the following new text:

The installation of a power outlet and a system outlet in a common box is allowed only if the system outlet can be installed in such a way that the live parts of the electric power distribution system cannot be touched by the installer.

10 System outlets and transfer points

Replace the last paragraph by the following new text:

Where safety protection is provided by means of isolating capacitors or transformers, the isolated conductors, for example inner conductors, shall withstand a continuous DC test voltage of 2 120 V for a period of not less than 1 min and maintain an insulation resistance of not less than 3,0 MΩ.

NOTE Compliance with this requirement can be shown to be achieved if the current during the test does not exceed 0,7 mA.

The manufacturer shall design the isolating means in such a way that, under fault conditions of equipment connected to the outlet or transfer point, the AC leakage current (50 Hz or 60 Hz) does not exceed 8 mA RMS with an applied voltage of 230 V RMS.

Page 31

10.1 System outlet

Replace the existing text by the following new text:

There are four types of system outlets in common use providing varying degrees of protection against electric shock (hazardous body currents), but also more or less liable to radiate or pick-up high-frequency energy.

10.1.1 Fully isolated system outlet

Replace the first sentence by the following new text:

This type of outlet incorporates isolating components in series with both the inner and the outer conductors of the coaxial connections.

10.1.2 Semi-isolated system outlet

Replace the existing text by the following new text:

This type of outlet incorporates an isolating component in series with the inner conductors only of the coaxial connections. If this outlet is used, the protection shall be provided by equipotential bonding of the outer conductor of the subscriber feeder. In this case, the DC resistance between the outer conductor of the connection and the nearest network equipotential bonding point shall be less than 5 Ω. The isolating component may be either a high-voltage capacitor or a double-wound transformer.

10.1.3 Non-isolated system outlet with protective element

Replace the existing text by the following new text:

This type of outlet does not incorporate any series isolation. Protection shall be provided by equipotential bondings as in 10.1.2. A protective element to improve safety (e.g. an RF coil) shall be connected between the inner and outer conductors of the coaxial connections. The DC resistance of this protective element shall be less than 1 Ω. The DC resistance between the

outer conductor of the coaxial connections and the nearest network equipotential point shall be less than 5 Ω.

10.1.4 Non-isolated system outlet without protective element

Replace the second sentence by the following note:

NOTE When this type of system outlet is used for back-powering, provision shall be made to prevent the power reaching other outlets.

10.2 Transfer point

Replace the first sentence by the following new text:

This device can also provide varying degrees of protection against electric shock (hazardous body currents), depending on the elements incorporated.

11 Protection against atmospheric overvoltages and elimination of potential differences

Add, after the first paragraph, the following new text:

All parts of the antenna system shall be so designed that they will withstand a lightning discharge without danger of fire or separation of the antenna system or parts thereof from the supporting structure.

Page 33

11.2.1 Earthing and bonding mechanisms

Replace the existing text by the following new text:

The mast shall be connected to earth via an earthing conductor. The outer conductors of all coaxial cables coming from the antenna shall be connected to the mast or to the earthing conductor via an equipotential bonding conductor having a minimum cross-section of 4 mm^2 Cu (see figure 8). The formation of loops shall be avoided. The earthing conductor shall be installed straight and vertical such that it can provide the shortest, most direct path to the earth-termination system.

Page 35

11.3 Overvoltage protection

Replace the last sentence by the following new text:

Examples are shown in figures 14 and 15.

Page 37

12 Mechanical stability

12.2 Bending moment

Replace the third sentence by the following new text:

The fixed part of the mast should be at least one-sixth of the full length.

Page 39

13 Laser radiation

Delete the title and text of this clause

Page 41

Figures

Replace figure 8, on page 55, by the following new figure 8:

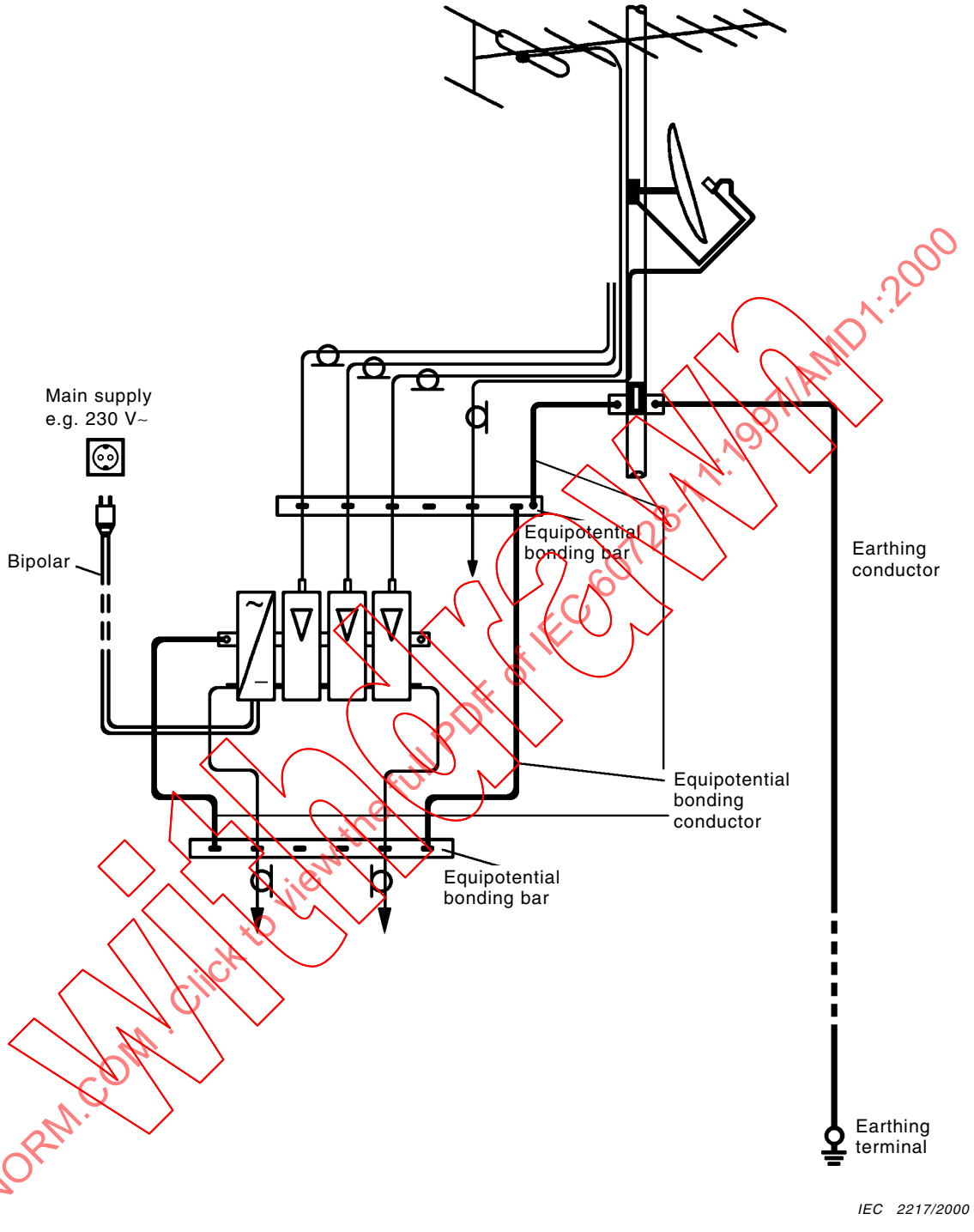

Figure 8 – Example of equipotential bonding and earthing antennas and head-ends

Page 65

Add the following new figures 14 and 15:

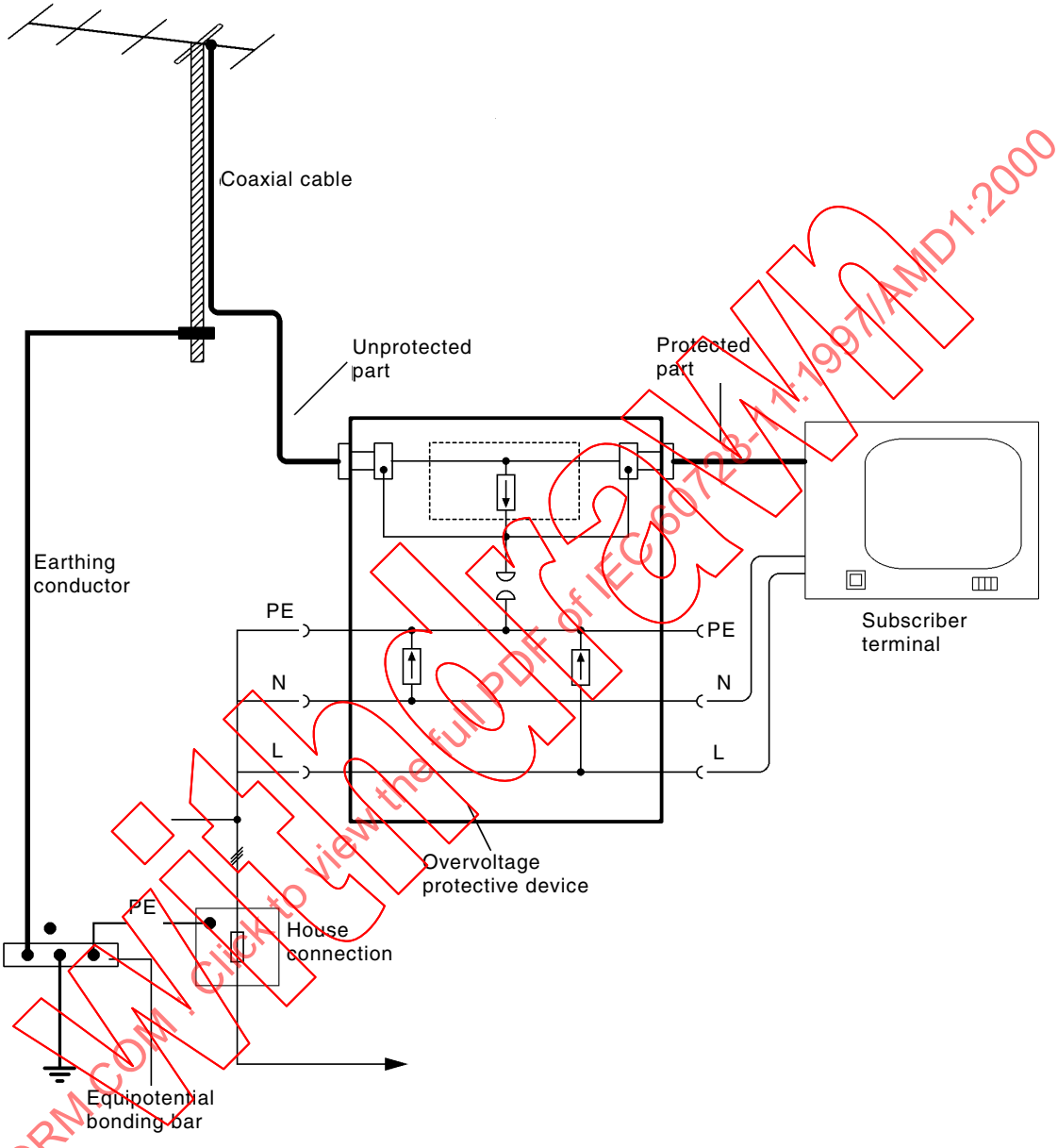

Figure 14 – Example of an overvoltage protective device

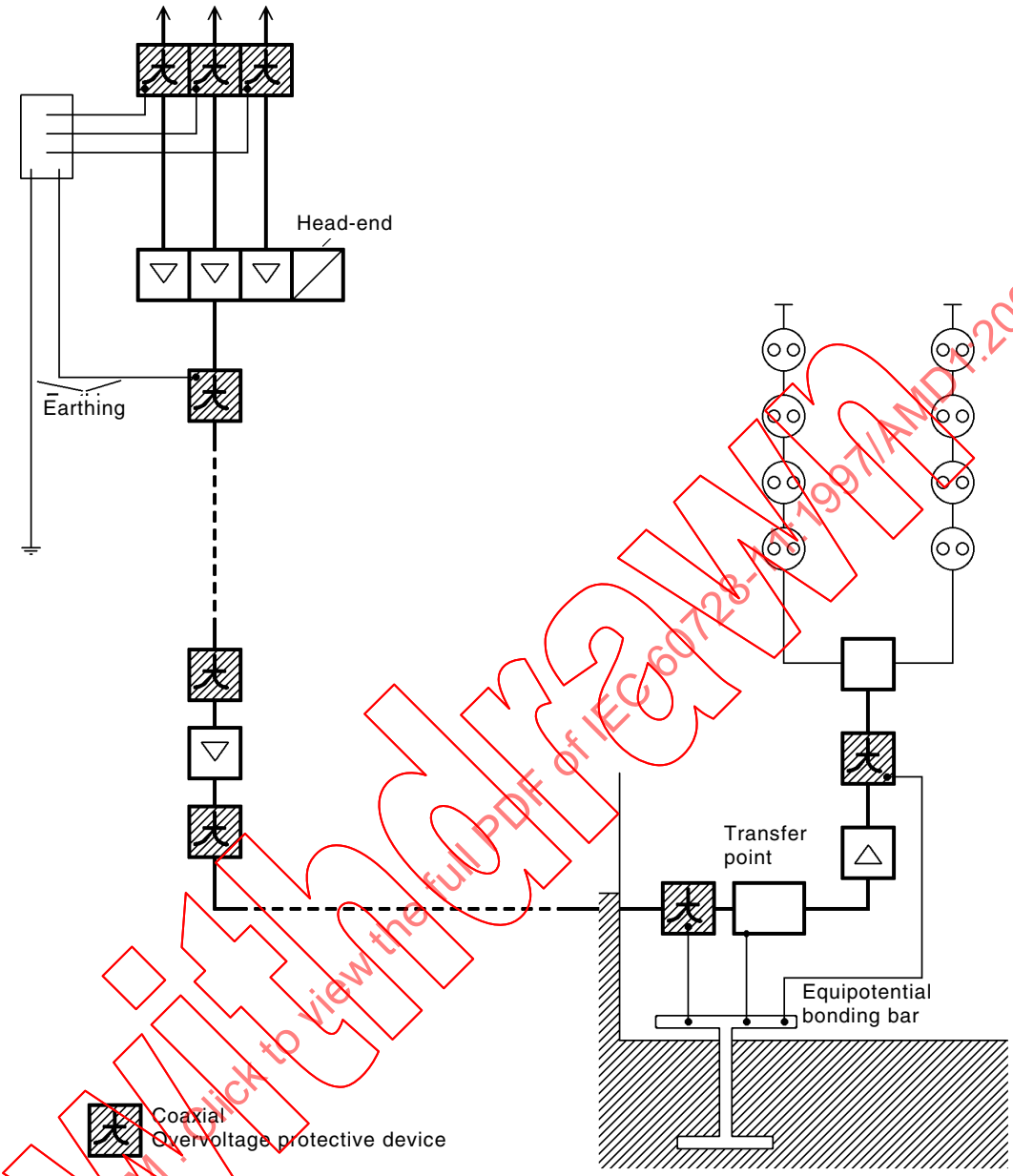

Figure 15 – Example of application of a coaxial overvoltage protective device