

Interconnections of satellite receiving equipment —

Part 1: Europe

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- Audio Engineering Society
- British Broadcasting Corporation
- British Educational Suppliers' Association
- British Radio and Electronic Equipment Manufacturers' Association
- British Telecommunications plc
- Federation of British Audio
- Federation of the Electronics Industry
- Independent Television Association
- Institute of Sound and Communication Engineers
- Institution of Electrical Engineering
- International Association of Broadcasting Manufacturers
- Professional Lighting and Sound Association
- Royal Institute of British Architects
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National foreword

This British Standard has been prepared by Subcommittee EPL/100/3 and is the English language version of EN 61319-1:1995 *Interconnections of satellite receiving equipment — Part 1: Europe*, including amendment A11:1999, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 61319-1:1995, published by the International Electrotechnical Commission (IEC).

Cross-references

Publication referred to	Corresponding British Standard
EN 60065:1993 (IEC 65:1985)	BS EN 60065:1994 <i>Safety requirements for mains operated electronic and related apparatus for household and similar general use</i>
EN 60169-24:1993 (IEC 169-24:1991)	BS EN 60169 <i>Radio-frequency connectors</i> BS EN 60169-24:1994 <i>Radio-frequency coaxial connectors with screw coupling, typically for use in 75 ohm cable distribution systems (Type F)</i>
EN 60933-4:1994 (IEC 933-4:1994)	BS EN 60933 <i>Audio, video and audiovisual systems. Interconnections and matching values</i> BS EN 60933-4:1994 <i>Connector and crudest for domestic digital bus (D2B)</i>
EN 60958:1990 (IEC 958:1989)	BS EN 60958:1995 (BS 7239:1995) <i>Specification for digital audio interface</i>
EN 61030:1993 (IEC 1030:1991)	BS EN 61030:1993 <i>Specification for domestic digital bus (D2B) for audio, video and audiovisual systems</i>
HD 134.2 S2:1984 (IEC 169-2:1965)	BS 3041 <i>Radio-frequency connectors</i> Part 2:1977 <i>Specification for coaxial unmatched connector</i> BS 6840 <i>Sound system equipment</i>
HD 483.11 S3:1993 (IEC 268-11:1987)	Part 11:1994 <i>Specification for application of connectors for the interconnection of sound system components</i>
HD 483.15 S4:1992 (IEC 268-15:1987)	Part 15:1992 <i>Specification for matching values for the interconnection of sound system components</i>

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Summary of pages

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English version

Interconnections of satellite receiving equipment — Part 1: Europe

(includes amendment A11:1999)

(IEC 61319-1:1995)

Interconnexions des équipements de réception
satellite —

Partie 1: Europe

(inclut l'amendement A11:1999)

(CEI 61319-1:1995 + A11:1999)

Zusammenschaltung von

Satelliten-Empfangsgeräten —

Teil 1: Europa

(enthält Änderung A11:1999)

(IEC 61319-1:1995 + A11:1999)

This European Standard was approved by CENELEC on 1995-11-28; amendment A11 was approved by CENELEC on 1998-10-01. 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.

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European Committee for Electrotechnical Standardization

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Europäisches Komitee für Elektrotechnische Normung

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

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Foreword

The text of document 84/420/FDIS, future edition 1 of IEC 1319-1, prepared by IEC TC 84, Equipment and systems in the field of audio, video and audiovisual engineering, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61319-1 on 1995-11-28.

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) 1996-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-09-01

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.

Foreword to amendment A11

This amendment to the European Standard EN 61319-1:1995 was prepared by the Technical Committee CENELEC TC 206, Broadcast receiving equipment.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A11 to EN 61319-1:1995 on 1998-10-01.

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- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1999-10-01

In this standard, Annex ZB, which is added by CENELEC, is normative.

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Introduction

Informal interconnection standards for satellite receiving equipment exist in Europe, North America and Japan, and they are not sufficiently similar to allow one common IEC standard to be achieved.

Consequently, it has proved necessary to produce three standards:

IEC 1319-1, *Interconnections of satellite receiving equipment — Part 1: Europe*.

IEC 1319-2, *Interconnections of satellite receiving equipment — Part 2: Japan*.

IEC 1319-3, *Interconnections of satellite receiving equipment — Part 3: North America*.

1 Scope

This part of IEC 61319 deals with the standardization of interconnections and matching values for satellite receivers for individual television and sound radio broadcast reception in the 10,70 GHz to 12,75 GHz band.

The diagram in Figure 1 illustrates, in an informative example of a system configuration, which interfaces are covered in the following clauses of this standard.

The interfaces between polarizer and satellite receiver are specified in Clause 4.

The interface between LNB and satellite receiver is specified in Clause 5.

The interfaces to the antenna position control are in Clause 6.

The interfaces between satellite receiver, and external descramblers and conditional access systems are in Clause 7.

The interfaces for DSR are in Clause 8.

Safety aspects are not within the scope of this part of the standard. Provisions should be taken to make products in conformity with appropriate regulations.

This part of IEC 1319 is mainly applied in Europe.

A method of communication between the satellite receiver and the peripheral equipment is given in Annex ZB.

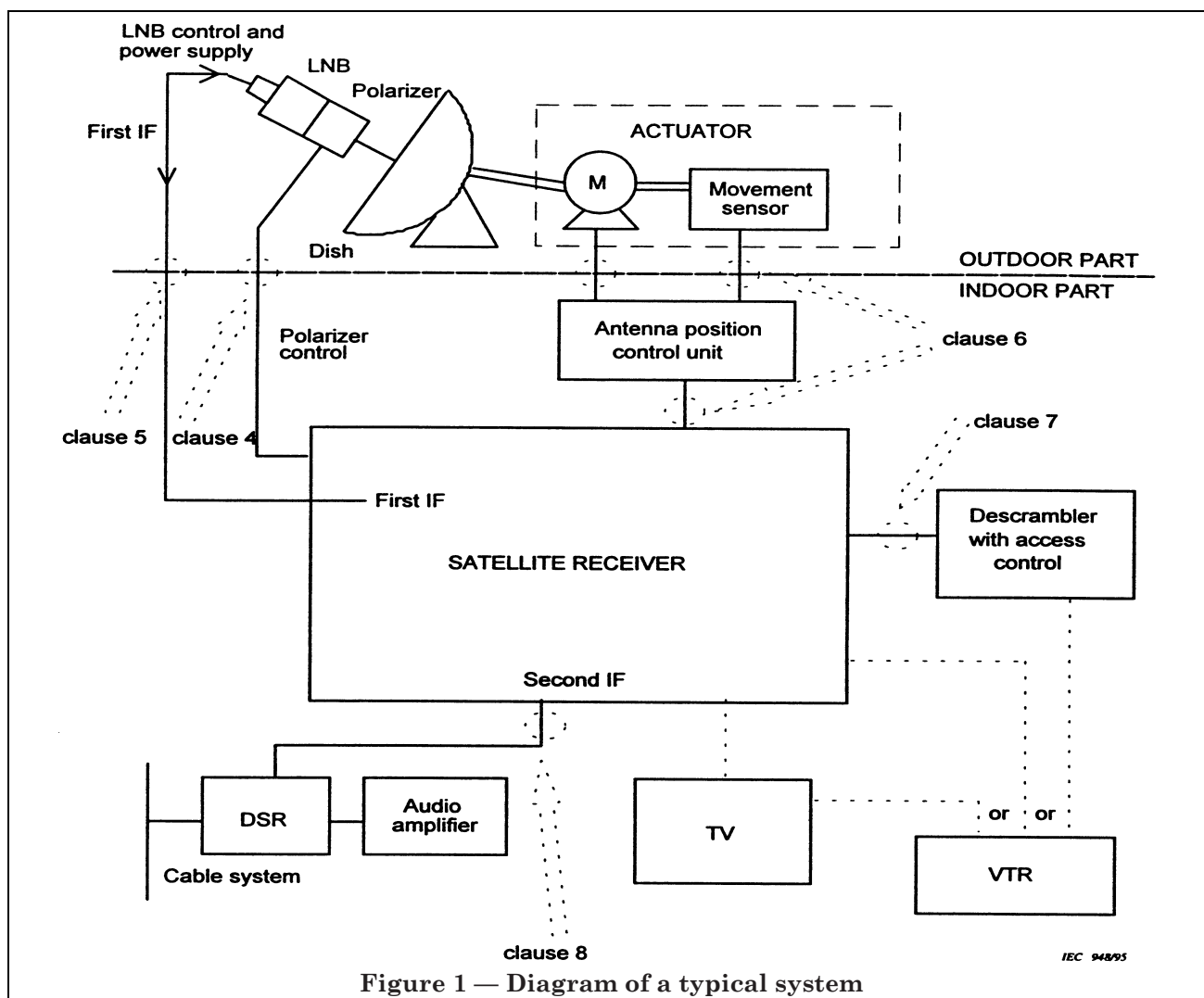


Figure 1 — Diagram of a typical system

2 Normative references

The following standards contain provisions which, through reference in the text, constitute provisions of this part of IEC 61319. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of IEC 61319 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60065:1985, *Safety requirements for mains operated electronic and related apparatus for household and similar general use*.
Amendment 3 (1992)

IEC 60130-9:1989, *Connectors for frequencies below 3 MHz — Part 9: Circular connectors for radio and associated sound equipment*.
Amendment 1 (1993)

IEC 60169-2:1965, *Radio-frequency connectors — Part 2: Coaxial unmatched connector*.
Amendment 1 (1982)

IEC 60169-24:1991, *Radio-frequency connectors — Part 24: Radio-frequency coaxial connectors with screw coupling, typically for use in 75 ohm cable distribution systems (Type F)*.

IEC 60268-11:1987, *Sound system equipment — Part 11: Application of connectors for the interconnection of sound system equipment*.
Amendment 2 (1991)

IEC 60268-15:1987, *Sound system equipment — Part 15: Preferred matching values for the interconnection of sound system components*.
Amendment 3 (1991)

IEC 60807-9:1993, *Rectangular connectors for frequencies below 3 MHz — Part 9: Detail specification for a range of peritelevision connectors*.

IEC 60933-1:1988, *Audio, video and audiovisual systems — Interconnections and matching values — Part 1: 21-pin connector for video systems — Application No. 1*.
Amendment 1 (1992)

IEC 60933-4:1994, *Audio, video and audiovisual systems — Interconnections and matching values — Part 4: Connector and cordset for domestic digital bus (D2B)*.

IEC 60958:1989, *Digital audio interface*.
Amendment 1 (1993)

IEC 61030:1991, *Audio, video and audiovisual systems — Domestic Digital Bus (D2B)*.
Amendment 1 (1993)

3 Explanation of terms and abbreviations

For the purpose of this part of IEC 61319, the following special terms and abbreviations are used:

3.1

DSR

Digital Satellite Radio

3.2

vertical (V) polarization

electromagnetic wave with vertically oriented electrical field vector

3.3

horizontal (H) polarization

as in 3.2, but with horizontal orientation

3.4

left-hand (L) polarization

polarization of an electromagnetic wave so that the electric field vector rotates anticlockwise when viewed, from the source, in the direction of propagation

3.5**right-hand (R) polarization**

as for 3.4, but the vector rotates clockwise

3.6**TTL levels**

voltages corresponding to logic 0 and logic 1 for 74-series TTL integrated circuit logic devices. Logic 0 corresponds to a voltage level from 0 V to 0,4 V, and logic 1 corresponds to a voltage level from 2,4 V to 5 V

3.7**TTL load**

load impedance provided worst case by one input of a 74-series integrated-circuit logic device

3.8**HCMOS load**

load impedance provided worst case by one input of a 74 HC-series integrated-circuit logic device

3.9**program position**

one of the controls (normally a push-button) on the receiver or its remote control unit, by means of which the user selects a pre-programmed transmission channel carrying a wanted emission, and with which is associated some non-volatile memory for storing data on the optimum adjustment of the receiver, and often of the associated equipment, for that emission

3.10**LNB**

Low noise block converter (also: "Block converter")

3.11**polarizer**

microwave unit which selects one type of polarization

3.12**polarswitcher**

polarizer which can be switched between different types of polarizations

3.13**actuator**

mechanical device for changing the antenna position

4 Interface requirements for polarizers and polarswitchers

4.1 Mechanical polarizers (optional)

Three output terminals shall be provided, with the corresponding signals.

- a) Common reference (ground): 0 V
- b) Voltage: 5,0 V ($\pm 10\%$)
Load current: 0,2 A continuous
0,5 A maximum during 1 s
- c) The control signal is a pulse width modulated signal with the following characteristics:
Voltages: TTL levels (see 3.6)
Pulse repetition rate: 17 ms to 21 ms
Pulse duration: 0,8 ms to 2,2 ms
Pulse polarity: positive going pulse

The waveguide probe shall be able to rotate through an angle in excess of 135° without mechanical blocking.

NOTE A minimum rotation angle of 135° is needed for polarizers suitable for the four polarization types V, H, R and L. Usually the antenna probe is placed behind a PTFE strip in a round waveguide. The PTFE strip should be oriented parallel to the H direction, so that the correspondence between rotation angle and polarization type is:

$$H = 0^\circ \quad R = 45^\circ \quad V = 90^\circ \quad L = 135^\circ$$

The other angles can be derived from the specified values by linear interpolation

A pulse duration in the range of 0,8 ms to 1,2 ms shall correspond to horizontal (H) polarization.

A pulse duration in the range of 1,6 ms to 2,2 ms shall correspond to vertical (V) polarization.

NOTE These ranges take into account mechanical tolerances in the polarizer and in the mounting of the antenna.

If the pulse is generated digitally, the change in pulse duration required to produce a rotation of 135° shall have a resolution of at least 1 part in 128 of the maximum duration of the pulse.

The control pulse train may be continuous, or active only during change commands. In the latter case, it is essential that the 5 V supply voltage line is activated (and deactivated) with the pulse already (or still) in existence. The total duration of the active pulse train shall be at least 1,5 s.

4.2 Magnetic polarizers (using the Faraday effect)

In order to ensure a constant magnetic field strength over a wide temperature range, a symmetrical constant current supply is preferred.

4.2.1 Polarizers for two orthogonal polarizations

The constant current supply shall have a range of at least ± 50 mA, and shall be capable of passing 50 mA into a load resistance of 100Ω .

4.2.2 Polarizers for four polarizations

The constant current supply shall have a range of at least +100 mA to -50 mA, and shall be capable of passing +100 mA and -50 mA into a load resistance of 100Ω .

To compensate for the considerable differences in the sensitivity (angle of rotation for a given current) of different types of polarizers, a resolution of at least 1 part in 256 of the maximum rotation angle is recommended if the current is controlled digitally.

The above-mentioned requirements are based on a maximum polarizer sensitivity corresponding to a 45° rotation and a current of 25 mA. Due to the variation of sensitivity of some types of polarizers to carrier frequency, it is recommended that the individual current value for each program position should be stored in the memory of the receiver.