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INFORMATION TECHNOLOGY –
GENERIC CABLELING FOR HOMES

FOREWORD

1) ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

3) All users should ensure that they have the latest edition of this publication.

4) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.

5) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 15018 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.
Introduction

This standard specifies a generic cabling for three groups of applications in homes:

- Information and Communications Technologies (ICT);
- Broadcast and Communications Technologies (BCT);
- Commands, Controls and Communications in Buildings (CCCB);

as shown in Figure 1, and it is intended to guide installations in new buildings or refurbishments. (Cabling is a part of the infrastructure that supports home systems.)

This standard also applies where cabling is installed to support only one or two of the three application groups listed above.

This standard specifies a generic cabling infrastructure based upon balanced cabling and/or coaxial cabling. ICT channels specified in this standard include optical fibre. The wider use of fibre optical cabling in a home is for further study.

These groups of applications may also be supported by different types of cabling, which may be subject to other standards. For example, ISO/IEC 11801 specifies generic cabling for ICT applications in general for the office environment. While the cabling structure and reference implementations are matched to the home environment in this standard, the channel performances specified for ICT are identical to those specified in ISO/IEC 11801.

This standard specifies a generic cabling for a home that may support ICT, BCT and CCCB application groups. Because it is designed to cover the three major groups, the cabling system may be installed prior to the selection of specific applications. The home may contain one or more buildings (e.g. farm) or may be within a building which contains more than one home (e.g. one home in a multi-dwelling building).

The campus or backbone cabling connecting individual homes is built according to the relevant standard (for instance ISO/IEC 11801 or IEC 60728).

Generic cabling realised according to this standard:

a) allows deployment of a wide range of applications without changes to the fixed cabling infrastructure;

b) provides a platform to support moves, adds and changes of connectivity.

This standard provides:

- users with an application-independent generic cabling for applications run in homes;
- users with a flexible cabling scheme such that changes are both easy and economical;
- building professionals (for example, architects) with guidance for accommodating cabling before specific requirements are known, i.e. in the initial planning either for construction or refurbishment;
- industry and applications standardisation bodies (e.g. ITU-T, ISO/IEC JTC 1/SC 6, ISO/IEC JTC 1/SC 25/WG 1, IEC TC 100) with a cabling system that supports current products and provides a basis for future product development in home electronic systems;
- users, designers and manufacturers of application-specific cabling systems with advice on interfacing to this generic cabling;
- suppliers of cabling components and installers of cabling with relevant requirements;
- service providers with a distribution system for their services.
Figure 1 – Overview of a generic cabling for home
A number of ICT, BCT and CCCB applications have been analysed to determine the
requirements for a generic cabling (see Table D.2) and to specify the minimum performance
of channels given in clause 7. These requirements, together with the logical and physical
models described in clauses 5 and 6, have been used to develop the requirements for cabling
components and to stipulate their arrangement into generic cabling systems.

Wireless and (unguided) infrared as well as Power Line Communication may also be used for
applications mentioned above. Media used for these technologies are not covered in this
standard.
1 Scope

This International Standard specifies generic cabling for homes. A home may contain one or more buildings or may be within a building that contains more than one home.

This standard specifies a generic cabling for three groups of applications:

- Information and Communications Technologies (ICT);
- Broadcast and Communications Technologies (BCT);
- Commands, Controls and Communications in Buildings (CCCB).

It specifies cabling that comprises one or more of the following:

- balanced cabling;
- coaxial cabling;
- optical fibre cabling.

The standard specifies the requirements for the design and configuration of the generic cabling with respect to:

- structure and topology;
- minimum configuration;
- performance requirements for permanent links and channels;
- density and location of connection points;
- interfaces to application-specific equipment and external networks;
- coexistence with other building services.

Although safety (electrical, fire, etc.) and electromagnetic compatibility (EMC) requirements are outside the scope of this International Standard and are covered by other standards and regulations, information given in this International Standard may be of assistance in meeting these requirements.

NOTE 1 National regulations and local codes may preclude carrying certain services on the cabling specified in this standard.

NOTE 2 Test requirements in this standard are for system designers. The installation tests should be decided between supplier and customer or according to the relevant installation guide.

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.

IEC 60189-1:1986, Low-frequency cables and wires with PVC insulation and PVC sheath – Part 1: General test and measuring methods
Amendment 3 (1992)

IEC 60352-3, Solderless connections – Part 3: Solderless accessible insulation displacement connections – General requirements, test methods and practical guidance

IEC 60352-4, Solderless connections – Part 4: Solderless non-accessible insulation displacement connections – General requirements, test methods and practical guidance
IEC 60352-6, Solderless connections – Part 6: Insulation piercing connections – General requirements, test methods and practical guidance

IEC 60364-4-41, Electrical installations of buildings – Part 4-41: Protection for safety – Protection against electric shock

IEC 60512-2, Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 2: General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests

IEC 60512-2-1985, Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 2: General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests

IEC 60512-25-1, Connectors for electronic equipment – Tests and measurements - Part 25-1: Test 25a – Crosstalk ratio


IEC 60512-3, Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 3: Current-carrying capacity tests

IEC 60603-7, Connectors for frequencies below 3 MHz for use with printed boards – Part 7: Detail specification for connectors, 8-way, including fixed and free connectors with common mating features, with assessed quality

IEC 60603-7-1:2002, Connectors for electronic equipment – Part 7-1: Detail specification for 8-way, shielded free and fixed connectors with common mating features, with assessed quality

IEC 60603-7-2, Connectors for electronic equipment – Part 7-2: Detail specification for 8-way unshielded free and fixed connectors, for data transmission with frequencies up to 100 MHz

IEC 60603-7-3, Connectors for electronic equipment – Part 7-3: Detail specification for 8-way shielded connectors for frequencies up to 100 MHz

IEC 60603-7-4, Connectors for electronic equipment – Part 7-4: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz (CAT 6, unshielded)

IEC 60603-7-5, Connectors for electronic equipment – Part 7-5: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz (CAT 6, shielded)

IEC 60603-7-7:2002, Connectors for electronic equipment – Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 600 MHz (category 7, shielded)

IEC 60728 (all parts), Cabled distribution systems for television and sound signals

1 To be published.
IEC 60966-1, *Radio frequency and coaxial cable assemblies – Part 1: Generic specification – General requirements and test methods*

IEC 60966-2-4, *Radio frequency and coaxial cable assemblies – Part 2-4: Detail specification for cable assemblies for radio and TV receivers – Frequency range 0 to 3 000 MHz, IEC 60169-2 connectors*

IEC 60966-2-5, *Radio frequency and coaxial cable assemblies – Part 2-5: Detail specification for cable assemblies for radio and TV receivers – Frequency range 0 to 1 000 MHz, IEC 61169-2 connectors*

IEC 60966-2-6, *Radio frequency and coaxial cable assemblies – Part 2-6: Detail specification for cable assemblies for radio and TV receivers – Frequency range 0 to 3 000 MHz, IEC 60169-24 connectors*

IEC 61024 series, *Protection of structures against lightning*

IEC 61076-3-104, *Connectors for electronic equipment – Part 3-104: Rectangular connectors – Detail specification for 8 way, shielded free and fixed connectors for data transmissions with frequencies up to 600 MHz minimum*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61156 (all parts), *Multicore and symmetrical pair/quad cables for digital communications*

IEC 61156-1, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-5, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz – Horizontal floor wiring - Sectional specification*

IEC 61156-6, *Multicore and symmetrical pair/quad cables for digital communications – Part 6: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz – Work area wiring - Sectional specification*

IEC 61156-7, *Multicore and symmetrical pair/quad cables for digital communications – Part 7: Symmetrical pair cables with transmission characteristics up to 1 200 MHz -Sectional specification for digital and analog communication cables*

IEC 61169-1, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC 61169-2, *Radio-frequency connectors – Part 2: Sectional specification - Radio frequency coaxial connectors of type 9,52*


IEC 61196 (all parts), *Radio-frequency cables*


ITU-T K.31, *Bonding configurations and earthing of telecommunication installations inside a subscriber's building*

EN 50289-1-14, *Communication cables – Specifications for test methods – Part 1-14: Electrical test methods – Coupling attenuation or screening attenuation of connecting hardware*