INTERNATIONAL STANDARD

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Information technology – Generic cabling for customer premises

Technologies de l'information –
Câblage générique des locaux d'utilisateurs

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialised 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.

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.

International Standard ISO/IEC 11801 was prepared by the Joint Technical Committee ISO/IEC JTC 1/SC 25, Interconnection of Information Technology Equipment.

This International Standard has taken into account requirements specified in application standards listed in annex G. It refers to International Standards for components and test methods whenever an appropriate International Standard was available.

Annexes A, B and C form an integral part of this International Standard.
Annexes D, E, F, G, H and J are for information only.

Introduction

Within customer premises, the importance of the cabling infrastructure is similar to that of other fundamental building utilities such as heating, lighting and mains power. As with other utilities, interruptions to service can have serious impact. Poor quality of service due to lack of design foresight, use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten an organisation's effectiveness.

Historically, the cabling within a premises comprised both application specific and multipurpose networks. Appropriate use of this International Standard will enable a controlled migration to generic cabling. Certain circumstances may warrant the introduction of application specific cabling; these instances should be minimised.

This International Standard provides:

a) users with an application independent generic cabling system and an open market for cabling components;

b) users with a flexible cabling scheme such that modifications are both easy and economical;

c) building professionals (for example, architects) with guidance allowing the accommodation of cabling before specific requirements are known; that is, in the initial planning either for construction or refurbishment;

d) industry and applications standardisation bodies with a cabling system which supports current products and provides a basis for future product development.

This International Standard specifies a multi-vendor cabling, and is related to:

a) International Standards for cabling components developed by committees of the IEC; for example, copper cables IEC/TC 46[1], copper connectors IEC/TC 48, optical fibre cables and connectors IEC/TC 86;

b) applications developed by the sub-committees of ISO/IEC JTC 1[2] and study groups of ITU-T[3]: for example, LANs: ISO/IEC JTC 1/SC 6 and SC 25/WG 4[4]; ISDN: ITU-T SG 13[5];

c) planning and installation guides for the implementation and use of generic cabling systems;

The applications listed in annex G have been analysed to determine the requirements for a generic cabling system. These requirements, together with statistics concerning premises geography from different countries and the model described in 6.1.1, have been used to develop the requirements for cabling components and to stipulate their arrangement into cabling systems. As a result, generic cabling defined within this International Standard is targeted at, but not limited to, the general office environment.

It is anticipated that the generic cabling system defined by this International Standard will have a life expectancy in excess of 10 years.

1) International Electrotechnical Commission - Technical Committee 46
2) International Organization for Standardization/International Electrotechnical Commission - Joint Technical Committee 1
3) International Telecommunication Union - Telecommunications
4) Subcommittee 25 - Working Group 4
5) Study Group 13

INTERNATIONAL STANDARD

Information technology –

Generic cabling for customer premises

1 Scope

International Standard ISO/IEC 11801 specifies generic cabling for use within commercial premises, which may comprise single or multiple buildings on a campus.

The International Standard is optimised for premises having a geographical span of up to 3 000 m, with up to 1 000 000 m² of office space, and a population between 50 and 50 000 persons. It is recommended that the principles of this International Standard be applied to installations that do not fall within this range.

Cabling defined by this International Standard supports a wide range of services including voice, data, text, image and video.

This International Standard specifies:

a) the structure and minimum configuration for generic cabling[1],

b) implementation requirements,

c) performance requirements for individual cabling links and

d) conformance requirements and verification procedures.

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

1) Cables and cords used to connect application specific equipment to the generic cabling system are outside of the scope of this International Standard. Since they have significant effect on the transmission characteristics of the channel, assumptions and guidance are provided on their performance and length.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of ISO/IEC 11801. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 68-1:1988, Basic environmental testing procedures – Environmental testing – Part 1: General and guidance

IEC 68-2-2:1974, Basic environmental testing procedures – Part 2: Tests – Tests B: Dry heat

IEC 68-2-6:1982, Basic environmental testing procedures – Part 2: Tests – Tests Fc and guidance: Vibration (sinusoidal)

IEC 68-2-14:1984, Basic environmental testing procedures – Part 2: Tests – Test N: Change of temperature

IEC 68-2-38:1974, Basic environmental testing procedures – Part 2: Tests – Test Z/AD: Composite temperature/humidity cyclic test

IEC 68-2-60 TTD:1990, Basic environmental testing procedures – Part 2: Tests – Test Ke: Corrosion tests in artificial atmosphere at very low concentration of polluting gas(es) [Technical Trend Document]

IEC 96-1:1986, Radio-frequency cables – Part 1: General requirements and measuring methods

IEC 189-1:1986, Low-frequency cables and wires with p.v.c. insulation and p.v.c. sheath – Part 1: General test and measuring methods

IEC 227-2:1979, Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 2: Test methods

IEC 512-1:1994, Electromechanical components for electronic equipment; basic testing procedures and measuring methods – Part 1: General

IEC 512-2:1985, 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
Amendment 1 (1988)

IEC 603-7:1990, 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

IEC 708-1:1981, Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath – Part 1: General design details and requirements

IEC 793-1:1992, Optical fibres – Part 1: Generic specification

IEC 793-2:1992, Optical fibres – Part 2: Product specifications

IEC 794-1:1993,	Optical fibre cables – Part 1: Generic specification
IEC 794-2:1989,	Optical fibre cables – Part 2: Product specifications
IEC 807-8:1992,	Rectangular connectors for frequencies below 3 MHz – Part 8: Detailed specification for connectors, four signal contacts and earthing contacts for cable screen
IEC 811-1-1:1993,	Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section 1: Measurement of thickness and overall dimensions – Tests for determining the mechanical properties
IEC 874-1:1993,	Connectors for optical fibres and cables – Part 1: Generic specification
IEC 874-10:1992,	Connectors for optical fibres and cables – Part 10: Sectional specification for fibre optic connector – Type BFOC/2,5
IEC 874-14:1993,	Connectors for optical fibres and cables – Part 14: Sectional specification for fibre optic connector – Type SC
IEC 1073-1:1994,	Splices for optical fibres and cables – Part 1: Generic specification – Hardware and accessories
IEC 1156-1:1994,	Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification
ISO/IEC 8802-5:1992,	Information technology – Local and metropolitan area networks – Part 5: Token ring access method and physical layer specifications
CISPR 22:1993,	Limits and methods of measurement of radio disturbance characteristics of information technology equipment.
ITU-T Rec. G.117:1988,	Transmission aspects of unbalance about earth (definitions and methods)
ITU-T Rec. G.650:1993,	Transmission media characteristics. Definition and test methods for the relevant parameters of single-mode fibres
ITU-T Rec. G.651:1993,	Characteristics of a 50/125 µm multimode graded index optical fibre cable
ITU-T Rec. G.652:1993,	Characteristics of a single-mode optical fibre cable
ITU-T Rec. O.9:1988,	Measuring arrangements to assess the degree of unbalance about earth

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this International Standard, the following definitions are applicable.

3.1.1 application: A system, with its associated transmission method which is supported by telecommunications cabling.

3.1.2 balanced cable: A cable consisting of one or more metallic symmetrical cable elements (twisted pairs or quads).

3.1.3 building backbone cable: A cable that connects the building distributor to a floor distributor. Building backbone cables may also connect floor distributors in the same building.

3.1.4 building distributor: A distributor in which the building backbone cable(s) terminate(s) and at which connections to the campus backbone cable(s) may be made.

3.1.5 building entrance facility: A facility that provides all necessary mechanical and electrical services, that complies with all relevant regulations, for the entry of telecommunications cables into a building.

3.1.6 cable: An assembly of one or more cable units of the same type and category in an overall sheath. It may include an overall shield.

3.1.7 cable element: The smallest construction unit (for example pair, quad, or single fibre) in a cable. A cable element may have a shield.

3.1.8 cable unit: A single assembly of one or more cable elements of the same type or category. The cable unit may have a shield.

NOTE - A binder group is an example of a cable unit.

3.1.9 cabling: A system of telecommunications cables, cords, and connecting hardware that can support the connection of information technology equipment.

3.1.10 campus: A premises containing one or more buildings.

3.1.11 campus backbone cable: A cable that connects the campus distributor to the building distributor(s). Campus backbone cables may also connect building distributors directly.

3.1.12 campus distributor: The distributor from which the campus backbone cabling emanates.

3.1.13 channel: The end-to-end transmission path connecting any two pieces of application specific equipment. Equipment and work area cables are included in the channel.

3.1.14 cross-connect: A facility enabling the termination of cable elements and their connection, primarily by means of patch cords or jumpers.

3.1.15 distributor: The term used for the functions of a collection of components (such as, patch panels, patch cords) used to connect cables.

3.1.16 equipment cable: A cable connecting equipment to a distributor.

3.1.17 equipment room: A room dedicated to housing distributors and application specific equipment.

3.1.18 floor distributor: The distributor used to connect between the horizontal cable and other cabling subsystems or equipment. (See telecommunications closet).

3.1.19 generic cabling: A structured telecommunications cabling system, capable of supporting a wide range of applications. Generic cabling can be installed without prior knowledge of the required applications. Application specific hardware is not a part of generic cabling.

3.1.20 horizontal cable: A cable connecting the floor distributor to the telecommunications outlet(s).

3.1.21 hybrid cable: An assembly of two or more different types of cable units, cables or categories covered by an overall sheath. It may be covered by an overall shield.

3.1.22 individual work area: The minimum building space which would be reserved for an occupant.

3.1.23 interconnect: A location at which equipment cables are terminated and connected to the cabling subsystems without using a patch cord or jumper.

3.1.24 interface: A point at which connections are made to the generic cabling.

3.1.25 jumper: A cable unit or cable element without connectors, used to make a connection on a cross-connect.

3.1.26 keying: A mechanical feature of a connector system, which guarantees correct orientation of a connection, or prevents the connection to a jack or optical fibre adapter of the same type intended for another purpose.

3.1.27 link: The transmission path between any two interfaces of generic cabling. It excludes equipment and work area cables.

3.1.28 optical fibre cable (or optical cable): A cable comprising one or more optical fibre cable elements.

3.1.29 optical fibre duplex adapter: A mechanical device designed to align and join two duplex connectors.

3.1.30 optical fibre duplex connector: A mechanical termination device designed to transfer optical power between two pairs of optical fibres.

3.1.31 pair: A twisted pair or one side circuit (two diametrically facing conductors) in a star quad.

3.1.32 patch cord: Flexible cable unit or element with connector(s), used to establish connections on a patch panel.

3.1.33 patch panel: A cross-connect designed to accommodate the use of patch cords. It facilitates administration for moves and changes.

3.1.34 public network interface: A point of demarcation between public and private network. In many cases the public network interface is the point of connection between the network provider's facilities and the customer premises cabling.