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INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES

FOREWORD

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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.

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10) 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 11801 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This consolidated version of ISO/IEC 11801 consists of the second edition (2002), its Amendment 1 (2008), its Corrigenda 1 (September 2002) and 2 (December 2002) and its Amendment 2 (2010).

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 2.2.

Exceptionally, this consolidated version gives no indication where the contents of the base publication has been modified by amendments.

The significant changes with respect to the first edition and its amendments are listed in Annex H.

This International Standard has taken into account requirements specified in application standards listed in Annex F. It refers to International Standards for components and test methods whenever appropriate International Standards are available.

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

This International Standard has been approved by vote of the member bodies, and the voting results for both the base publication and its amendments may be obtained from the address given on the second title page.

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 a 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 premises comprised both application specific and multipurpose networks. The original edition of this standard enabled a controlled migration to generic cabling and the reduction in the use of application-specific cabling.

The subsequent growth of generic cabling designed in accordance with ISO/IEC 11801 has

a) contributed to the economy and growth of Information and Communications Technology (ICT),
b) supported the development of high data rate applications based upon a defined cabling model, and
c) initiated development of cabling with a performance surpassing the performance classes specified in ISO/IEC 11801:1995 and ISO/IEC 11801 Ed1.2:2000.

NOTE ISO/IEC 11801, edition 1.2 consists of edition 1.0 (1995) and its amendments 1 (1999) and 2 (1999).

This second edition of ISO/IEC 11801 has been developed to reflect these increased demands and opportunities.

This International Standard provides:

a) users with an application independent generic cabling system capable of supporting a wide range of applications;
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 standardization 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 system which may be implemented with material from single and multiple sources, and is related to:

a) international standards for cabling components developed by committees of the IEC, for example copper cables and connectors as well as optical fibre cables and connectors (see Clause 2 and bibliography);
b) standards for the installation and operation of information technology cabling as well as for the testing of installed cabling (see Clause 2 and bibliography);
c) applications developed by technical committees of the IEC, by subcommittees of ISO/IEC JTC 1 and by study groups of ITU-T, for example for LANs and ISDN;
d) planning and installation guides which take into account the needs of specific applications for the configuration and the use of cabling systems on customer premises(ISO/IEC 14709 series).

Physical layer requirements for the applications listed in Annex F have been analysed to determine their compatibility with cabling classes specified in this standard. These application requirements, together with statistics concerning the topology of premises and the model described in 7.2, have been used to develop the requirements for Classes A to D and the optical class cabling systems. New Classes E and F have been developed in anticipation of future network technologies.

As a result, generic cabling defined within this International Standard

a) specifies a cabling structure supporting a wide variety of applications,

b) specifies channel and link Classes A, B, C, D and E meeting the requirements of standardised applications,

c) specifies channel and link Classes E and F based on higher performance components to support the development and implementation of future applications,

d) specifies optical channel and link Classes OF-300, OF-500, and OF-2000 meeting the requirements of standardised applications and exploiting component capabilities to ease the implementation of applications developed in the future,

e) invokes component requirements and specifies cabling implementations that ensure performance of permanent links and of channels that meet or exceed the requirements for cabling classes,

f) is targeted at, but not limited to, the general office environment.

This International Standard specifies a generic cabling system that is anticipated to have a usable life in excess of 10 years.

INTRODUCTION to Amendment 1

This amendment provides requirements for new Class E_A and F_A channels plus additions and corrections to ISO/IEC 11801:2002. Amendment 2 of ISO/IEC 11801:2002 will provide balanced cabling models, requirements and normative references for Category 6_A and 7_A components, requirements for Class E_A and F_A links, together with amendments to the requirements for optical fibre cabling.

INTRODUCTION to Amendment 2

Amendment 2 of ISO/IEC 11801:2002 provides balanced cabling models, requirements and normative references for Category 6_A and Category 7_A components, requirements for Class E_A and Class F_A links, together with amendments to the requirements for optical fibre cabling.

INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES

1 Scope

ISO/IEC 11801 specifies generic cabling for use within premises, which may comprise single or multiple buildings on a campus. It covers balanced cabling and optical fibre cabling.

ISO/IEC 11801 is optimised for premises in which the maximum distance over which telecommunications services can be distributed is 2 000 m. The principles of this International Standard may be applied to larger installations.

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

This International Standard specifies directly or via reference the:

a) structure and minimum configuration for generic cabling,

b) interfaces at the telecommunications outlet (TO),

c) performance requirements for individual cabling links and channels,

d) implementation requirements and options,

e) performance requirements for cabling components required for the maximum distances specified in this standard,

f) conformance requirements and verification procedures.

Safety (electrical safety and protection, fire, etc.) and Electromagnetic Compatibility (EMC) requirements are outside the scope of this International Standard, and are covered by other standards and by regulations. However, information given by this standard may be of assistance.

ISO/IEC 11801 has taken into account requirements specified in application standards listed in Annex F. It refers to available International Standards for components and test methods where appropriate.

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.

The provisions of the referenced specifications other than ISO/IEC, IEC, ISO and ITU documents, as identified in this clause, are valid within the context of this International Standard. The reference to such a specification within this International Standard does not give it any further status within ISO or IEC. In particular, it does not give the referenced specification the status of an International Standard.

IEC 60352 (all parts), *Solderless connections*

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 60352-5, *Solderless connections – Part 5: Press-in 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 60352-7, *Solderless connections – Part 7: Spring clamp connections – General requirements, test methods and practical guidance*

IEC 60352-8, *Solderless connections – Part 8: Compression mount connections – General requirements, test methods and practical guidance*

IEC 60364-1, *Low-voltage electrical installations – Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method*

IEC 60512-3-1, *Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance*

IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof*

IEC 60512-5-2, *Connectors for electronic equipment – Tests and measurements – Part 5-2: Current-carrying capacity tests – Test 5b: Current-temperature derating*

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

IEC 60512-25-2:2002, *Connectors for electronic equipment – Tests and measurements – Part 25-2: Test 25b – Attenuation (insertion loss)*

IEC 60512-25-4:2001, *Connectors for electronic equipment – Tests and measurements – Part 25-4: Test 25d – Propagation delay*

IEC 60512-25-5, *Connectors for electronic equipment – Tests and measurements – Part 25-5: Test 25e – Return loss*

IEC 60512-25-9:2008, *Connectors for electronic equipment – Tests and measurements – Part 25-9:* Signal integrity *tests – Test 25i: Alien crosstalk*

IEC 60512-26-100, *Connectors for electronic equipment – Tests and measurements – Part 26-100: Measurement setup, test and reference arrangements and measurements for connectors according to IEC 60603-7 – Tests 26a to 26g*

IEC 60603-7, *Connectors for electronic equipment – Part 7: Detail specification for 8-way, unshielded, free and fixed connectors*

IEC 60603-7-1, *Connectors for electronic equipment – Part 7-1: Detail specification for 8-way, shielded free and fixed connectors*

IEC 60603-7-2:2010, *Connectors for electronic equipment – Part 7-2: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz*

IEC 60603-7-3:2010, *Connectors for electronic equipment – Part 7-3: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz*

IEC 60603-7-4:2010, *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*

IEC 60603-7-5:2010, *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*

IEC 60603-7-41:2010, *Connectors for electronic equipment – Part 7-41: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz*

IEC 60603-7-51:2010, *Connectors for electronic equipment – Part 7-51: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz*

IEC 60603-7-7:–, *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*

IEC 60603-7-71:–, *Connectors for electronic equipment – Part 7-71: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 1 000 MHz*

IEC 60793-1-40, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

IEC 60793-1-44, *Optical fibres – Part 1-44: Measurement methods and test procedures – Cut-off wavelength*

IEC 60793-1-49, *Optical fibres – Part 1-49: Measurement methods and test procedures – Differential mode delay*

IEC 60793-2:2007, *Optical fibres – Part 2: Product specifications – General*

IEC 60793-2-10, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres*

IEC 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

IEC 60794 (all parts), *Optical fibre cables*

IEC 60794-2, *Optical fibre cables – Part 2: Indoor cables – Sectional specification*

IEC 60825 (all parts), *Safety of laser products*

IEC 60874-19-1:2007, *Fibre optic interconnecting devices and passive components Connectors for optical fibres and cables – Part 19-1: Fibre optic patch cord connector type SC-PC (floating duplex) standard terminated on multimode fibre type A1a, A1b – Detail specification*

IEC 60874-19-2:1999, *Connectors for optical fibres and cables – Part 19-2: Fibre optic adaptor (duplex) type SC for single-mode fibre connectors – Detail specification*

IEC 60874-19-3:2007, *Fibre optic interconnecting devices and passive components – Connectors for optical fibres and cables – Part 19-3 Fibre optic adaptor (duplex) type SC for multimode fibre connectors – Detail specification*

IEC 61073-1, *Fibre optic interconnecting devices and passive components – Mechanical splices and fusion splice protectors for optical fibres and cables – Part 1: Generic specification*

IEC 61076-3-104, *Connectors for electronic equipment – Part 3-104: Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1 000 MHz*

IEC 61076-3-110, *Connectors for electronic equipment – Part 3-110: Detail specification for shielded, free and fixed connectors for data transmission with frequencies up to 1 000 MHz*

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

IEC 61156-1:2007, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*
Amendment 1 (2009)

IEC 61156-2:2010, *Multicore and symmetrical pair/quad cables for digital communications – Part 2: Symmetrical pair/quad cables with transmission characteristics up to 100 MHz – Horizontal floor cable – Sectional specification*

IEC 61156-3:2008, *Multicore and symmetrical pair/quad cables for digital communications – Part 3: Work area wiring – Sectional specification*

IEC 61156-4:2009, *Multicore and symmetrical pair/quad cables for digital communications – Part 4: Riser cables – Sectional specification*

IEC 61156-5:2009, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal floor wiring – Sectional specification*

IEC 61156-6:2010, *Multicore and symmetrical pair/quad cables for digital communications – Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification*

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-2-2:1995, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-2: Tests – Mating durability*

IEC 61300-3-6:1997, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*
Amendment 1:1998

Amendment 2:1999

IEC 61300-3-34:2001, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-34: Examinations and measurements – Attenuation of random mated connectors*

IEC 61754-20:2002, *Fibre optic connector interfaces – Part 20: Type LC connector family*

IEC 61935-1, *Specification for the testing of balanced communication cabling in accordance with ISO/IEC 11801 – Part 1: Installed cabling*

IEC 61935-2, *Testing of balanced communication cabling in accorance with ISO/IEC 11801 – Part 2: Patch cords and work area cords*

IEC 62153-4-12, *Metallic communication cable test methods – Part 4-12: Electromagnetic compatibility (EMC) – Coupling attenuation or screened attenuation of connecting hardware – Absorbing clamp method*

ISO/IEC 14763-1, *Information technology – Implementation and operation of customer premises cabling – Part 1: Administration*

ISO/IEC TR 14763-2:2000, *Information technology – Implementation and operation of customer premises cabling – Part 2: Planning and installation*

ISO/IEC 14763-3, *Information technology – Implementation and operation of customer premises cabling – Part 3: Testing of optical fibre cabling*

ISO/IEC 15018, *Information technology – Generic cabling for homes*

ISO/IEC 18010, *Information technology – Pathways and spaces for customer premises cabling*

ISO/IEC TR 24750:2007, *Information technology – Assessment and mitigation of installed balanced cabling channels in order to suport 10GBASE-T*

ITU-T Recommendation O.9: *Measuring arrangements to assess the degree of unbalance about earth*