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ISO/IEC 11801-5

Edition 1.0 2017-11

INTERNATIONAL STANDARD

Information technology – Generic cabling for customer premises – Part 5: Data centres

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 35.200

ISBN 978-2-8322-5043-3

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CONTENTS

FOREWORD 6
INTRODUCTION 8
1 Scope 10
2 Normative references 10
3 Terms, definitions and abbreviated terms 11
3.1 Terms and definitions 11
3.2 Abbreviated terms 13
4 Conformance 13
5 Structure of the generic cabling system 14
5.1 General 14
5.2 Functional elements 14
5.3 General structure and hierarchy 14
5.4 Cabling subsystems 15
5.4.1 General 15
5.4.2 Network access cabling subsystem 16
5.4.3 Main distribution cabling subsystem 16
5.4.4 Intermediate distribution cabling subsystem 16
5.4.5 Zone distribution cabling subsystem 16
5.4.6 Design objectives 17
5.5 Accommodation of functional elements 17
5.6 Interfaces 17
5.6.1 Equipment interfaces and test interfaces 17
5.6.2 Channels and links 18
5.7 Dimensioning and configuring 19
5.7.1 Distributors 19
5.7.2 Redundancy 20
5.7.3 External network interface 21
5.7.4 Cables 22
5.7.5 Equipment cords 22
5.7.6 Patch cords and jumpers 22
5.7.7 Equipment outlets 22
5.7.8 LDP 23
5.7.9 Building entrance facilities 23
5.8 Earthing and equipotential bonding 23
6 Channel performance requirements 23
6.1 General 23
6.2 Environmental performance 25
6.3 Transmission performance 25
6.3.1 General 25
6.3.2 Balanced cabling 25
6.3.3 Optical fibre cabling 25
7 Link performance requirements 26
7.1 General 26
7.2 Balanced cabling 26
7.3 Optical fibre cabling 26

This is a preview - click here to buy the full publication

8 Reference implementations 26
8.1 General 26
8.2 Balanced cabling 26
8.2.1 Assumptions 26
8.2.2 Zone distribution cabling 27
8.2.3 Cabling between distributors 30
8.2.4 Network access cabling 33
8.3 Optical fibre cabling 35
8.3.1 General 35
8.3.2 Component choice 35
8.3.3 Dimensions 36
9 Cable requirements 36
9.1 General 36
9.2 Balanced cables 36
9.3 Optical fibre cables 36
10 Connecting hardware requirements 36
10.1 General requirements 36
10.1.1 Overview 36
10.1.2 Location 36
10.1.3 Design 37
10.1.4 Operating environment 37
10.1.5 Mounting 37
10.1.6 Installation practices 37
10.1.7 Marking and colour coding 37
10.2 Connecting hardware for balanced cabling 37
10.2.1 General requirements 37
10.2.2 Performance marking 37
10.2.3 Mechanical characteristics 37
10.3 Connecting hardware for optical fibre cabling 38
10.3.1 General requirements 38
10.3.2 ENI requirements 38
10.3.3 EO requirements 38
10.3.4 Optical fibre assignments at the EO 39
10.3.5 Connecting hardware at other locations 39
11 Requirements for cords and jumpers 39
11.1 Jumpers 39
11.2 Balanced cords 39
11.3 Optical fibre cords 39
Annex A (normative) Combination of balanced cabling links 40
A.1 General 40
A.2 Requirements 40
Annex B (informative) Usage of high density connecting hardware within optical fibre cabling 41
B.1 General 41
B.2 Use cases for high density connecting hardware 41
Annex C (informative) Examples of structures in accordance with ISO/IEC 11801-5 45
C.1 General 45
C.2 Data centre minimum configuration 46

This is a preview - click here to buy the full publication

C.3 End of Row concept 47
C.4 Middle of Row concept 48
C.5 Top of Rack concept 49
C.6 End of Row and Middle of Row concept with redundancy 50
C.7 Top of Rack concept with redundancy 51
C.8 End of Row concept with full redundancy 52
C.9 Top of Rack concept with redundancy 53
Annex D (informative) Examples of networking architectures 54
D.1 General 54
D.2 Data centre fabric fat-tree 54
D.3 Data centre fabric full-mesh 55
D.4 Data centre fabric interconnected meshes 55
D.5 Data centre fabric centralized switch 56
D.6 Data centre fabric virtual switch 57
Bibliography 58

Figure 1 – Relationships between the generic cabling documents produced by ISO/IEC JTC 1/SC 25 8
Figure 2 – Structure of generic cabling within a data centre 15
Figure 3 – Hierarchical structure of generic cabling within a data centre 15
Figure 4 – Example of accommodation of functional elements 17
Figure 5 – Test and equipment interfaces 19
Figure 6 – Connection of functional elements providing redundancy 21
Figure 7 – Examples of external service cabling connections to the ENI 22
Figure 8 – Example of a channel with four connections 24
Figure 9 – Example of a system showing the location of cabling interfaces 25
Figure 10 – Zone distribution cabling models 28
Figure 11 – Cabling model between distributors using Class E_A to F_A 31
Figure 12 – Cabling model between distributors using Class I and II 31
Figure 13 – Network access cabling models 34
Figure A.1 – Examples of combination of different links 40
Figure B.1 – Examples of high density connecting hardware within main distribution cabling and intermediate distribution cabling 42
Figure B.2 – Examples of high density connecting hardware at the LDP and EO within zone distribution cabling 44
Figure C.1 – Key for Figures C.2 through C.9 45
Figure C.2 – Example of a minimum configuration 46
Figure C.3 – Example of End of Row configuration 47
Figure C.4 – Example of Middle of Row configuration 48
Figure C.5 – Example of Top of Rack configuration 49
Figure C.6 – Example of End of Row configuration with redundancy 50
Figure C.7 – Example of Top of Rack configuration with redundancy 51
Figure C.8 – Example of End of Row configuration with full redundancy 52
Figure C.9 – Example of Top of Rack configuration with full redundancy 53
Figure D.1 – Fat-tree example 54
Figure D.2 – Full-mesh example 55

This is a preview - click here to buy the full publication

Figure D.3 – Interconnected mesh example 56
Figure D.4 – Centralized switch example 56
Figure D.5 – Virtual switch example 57

Table 1 – Zone distribution cabling – length assumptions for balanced cabling using Classes E_A to F_A 29
Table 2 – Zone distribution cabling – length assumptions for balanced cabling using Classes I and II 30
Table 3 – Zone distribution channel length equations for Classes 30
Table 4 – Cabling between distributors – length assumptions for balanced cabling using Classes E_A to F_A 31
Table 5 – Cabling between distributors – length assumptions for balanced cabling using Classes I and II 32
Table 6 – Length equations for cabling between distributors 32
Table 7 – Network access cabling channel equations 35
Table 8 – Connecting hardware of the type used at the EO 37

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INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES –

Part 5: Data centres

FOREWORD

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International Standard ISO/IEC 11801-5 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This first edition cancels and replaces ISO/IEC 24764:2010 and Amendment 1:2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) standard re-structured to contain only those requirements that are specific for generic cabling systems installed in data centres;

b) addition of balanced cabling channels Class I and Class II;

c) addition of examples of structures in accordance with ISO/IEC 11801-5 in Annex C;

d) addition of examples of networking architectures in Annex D.

ISO/IEC 11801-5 is to be read in conjunction with ISO/IEC 11801-1.

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This International Standard has been approved by vote of the member bodies, and the voting results can be obtained from the address given on the second title page.

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

A list of all parts in the ISO/IEC 11801 series, published under the general title *Information technology – Generic cabling for customer premises*, can be found on the IEC website.

The contents of the corrigendum of April 2018 have been included in this copy.

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INTRODUCTION

The importance of cabling infrastructure is similar to that of other fundamental utilities such as water and energy supply and interruptions to the services provided over that infrastructure can have a serious impact. A lack of design foresight, the use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten quality of service and have commercial consequence for all types of users.

This document specifies generic cabling within and to the computer room spaces of data centre premises, or computer room spaces within other types of building.

Additionally those premises can include

- office spaces for which generic cabling is specified in ISO/IEC 11801-2,
- industrial spaces for which generic cabling is specified in ISO/IEC 11801-3.

Generic cabling for distributed building services in data centre spaces is specified in ISO/IEC 11801-6, which addresses all of the above premises and spaces within them.

Figure 1 shows the schematic and contextual relationships between the standards relating to information technology cabling produced by ISO/IEC JTC 1/SC 25, namely the ISO/IEC 11801 series of standards for generic cabling design, standards for the installation, operation and administration of generic cabling and for testing of installed generic cabling.

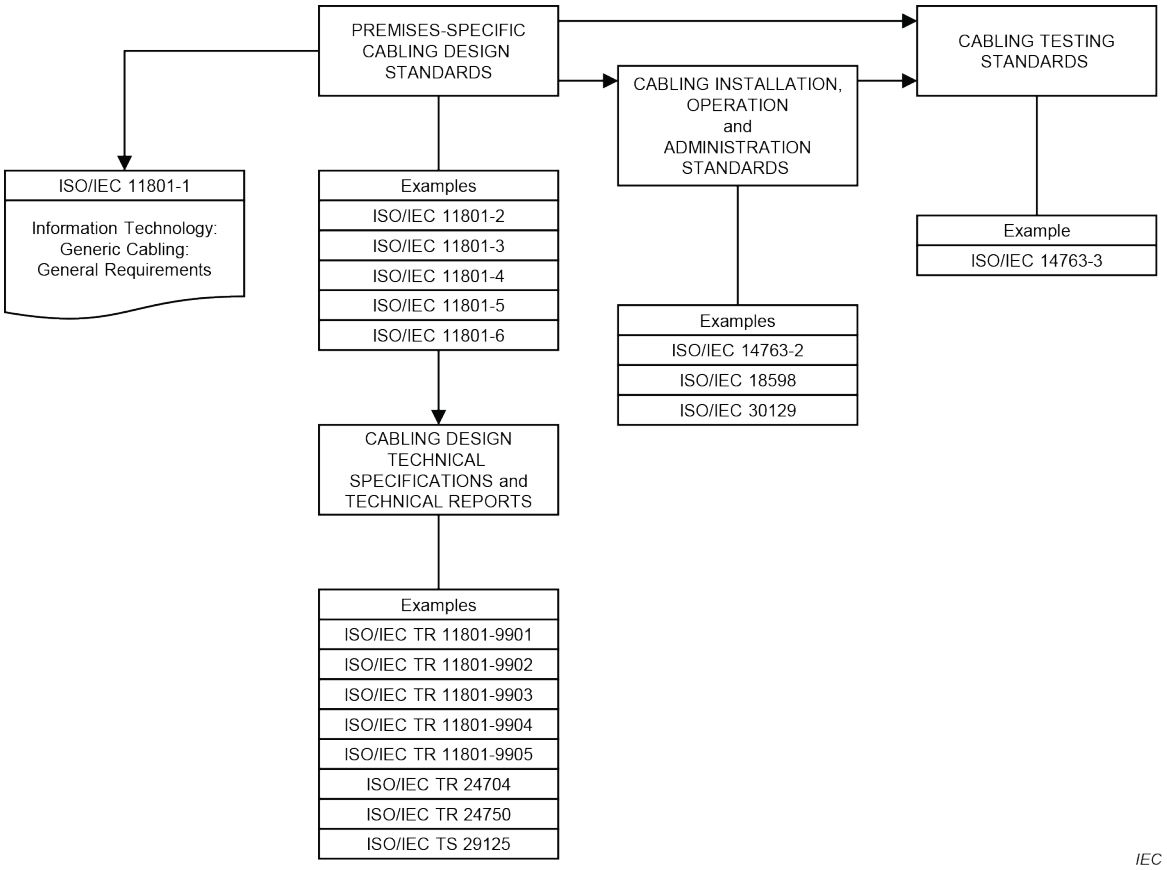

Figure 1 – Relationships between the generic cabling documents produced by ISO/IEC JTC 1/SC 25

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The generic cabling specified by this document provides users with

a) an application independent system capable of supporting a wide range of applications in a range of installation and operating environments,

b) a flexible scheme such that modifications are both easy and economical,

c) a multi-vendor supply chain within an open market for cabling components.

In addition, this document provides

d) relevant industry professionals with guidance allowing the accommodation of cabling before specific requirements are known, i.e. in the initial planning either for construction or refurbishment and for further deployment as the requirements of areas are defined,

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

Applications addressed in this document include those developed by the technical committees of IEC (including the subcommittees of ISO/IEC JTC 1) and study groups of ITU-T as used to support high data rate, mission-critical services within the densely connected environment of data centre spaces.

This document has taken into account requirements specified in application standards listed in Annex E of ISO/IEC 11801-1:2017.

This document should be read in conjunction with ISO/IEC 11801-1, which was created to consolidate general requirements for generic cabling into a single standard which allows the other standards in the ISO/IEC 11801 series to have a common reference.

Physical layer requirements for the applications listed in Annex E of ISO/IEC 11801-1:2017 have been analysed to determine their compatibility with the cabling performance specified in this document and, together with statistics concerning premises geography from different countries and the models described in Clause 6, have been used to develop the requirements for cabling components and to stipulate their arrangement into cabling systems.

As a result, this International Standard specifies a structure for generic cabling supporting a wide variety of applications, which

1) adopts balanced cabling channel and link Classes E_A, F, F_A, I and II specified in ISO/IEC 11801-1,

2) adopts component requirements, specified in ISO/IEC 11801-1, and specifies cabling implementations that ensure performance of permanent links and of channels that meet or exceed the requirements of a specified group (e.g. Class) of applications,

3) adopts optical fibre cabling channel and link requirements specified in ISO/IEC 11801-1.

Life expectancy of generic cabling systems can vary depending on environmental conditions, supported applications, aging of materials used in cables, and other factors such as access to pathways (campus pathways are more difficult to access than building pathways). With appropriate choice of components, generic cabling systems meeting the requirements of this document are expected to have a life expectancy of at least ten years

This document has taken into account requirements specified in application standards listed in ISO/IEC 11801-1:2017, Annex E. It refers to International Standards for components and test methods whenever appropriate International Standards are available.

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INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES –

Part 5: Data centres

1 Scope

This part of ISO/IEC 11801 specifies generic cabling within and to the computer room spaces of data centre premises, or data centre spaces within other types of buildings. It covers balanced cabling and optical fibre cabling.

This document is optimized for premises in which the maximum distance over which telecommunications services can be distributed is 2 000 m. The principles of this document can also be applied to larger installations.

Cabling specified by this document supports a wide range of services including voice, data and video that can also incorporate the supply of power.

This document specifies directly or via reference to ISO/IEC 11801-1

a) the structure and minimum configurations for generic cabling within data centres,

b) the interfaces at the equipment outlet (EO) and the external network interface (ENI),

c) the performance requirements for cabling links and channels,

d) the implementation requirements and options,

e) the performance requirements for cabling components,

f) the conformance requirements and verification procedures.

Safety (e.g. electrical safety and protection, fire) and electromagnetic compatibility (EMC) requirements are outside the scope of this document, and are covered by other standards and by regulations. However, information given by this document can be of assistance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60603-7-7, *Connectors for electronic equipment – Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors for data transmissions with frequencies up to 600 MHz*

IEC 60603-7-41, *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, *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 60603-7-71, *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*

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IEC 60603-7-81, *Connectors for electronic equipment – Part 7-81: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 2 000 MHz*

IEC 60603-7-82, *Connectors for electronic equipment – Part 7-82: Detail specification for 8-way, 12 contacts, shielded, free and fixed connectors, for data transmissions with frequencies up to 2 000 MHz*

IEC 61754-7-1, *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7-1: Type MPO connector family – One fibre row*

IEC 61754-7-2, *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7-2: Type MPO connector family – Two fibre rows*

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

IEC 61755-3-2, *Fibre optic connector optical interfaces – Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrules for 8 degrees angled-PC single mode fibres*

ISO/IEC 11801-1:2017, *Information technology – Generic cabling for customer premises – Part 1: General requirements*

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

ISO/IEC 30129, *Information technology – Telecommunications bonding networks for buildings and other structures*