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

This draft Tanzania Standard is being prepared by the Telecommunications and Information Technology Technical Committee, under the supervision of the Electrotechnical divisional standards committee (EDC)

This draft Tanzania Standard is an adoption of the International Standard ISO/IEC 11801-5:2017 Information technology – Generic cabling for customer premises Part 5: Data centres, which has been prepared by the International Electrotechnical Commission.

2 Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following: -

1) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use “full point” on the baseline as the decimal marker.

2) Where the words “International Standard(s)” appear, referring to this standard they should read “Tanzania Standard(s)”. 
INTERNATIONAL STANDARD

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

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FOREWORD

1) ISO (the International Organization for Standardization) and IEC (the 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees and ISO member bodies.

3) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC National Committees and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

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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 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.
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.
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
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

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 EA, F, FA, 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.
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:

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
3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11801-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1 computer room
one or more spaces primarily dedicated to housing cabling and equipment used for electronics data storage, processing and networking

3.1.2 computer room space
area within the data centre that accommodates the data processing, data storage and telecommunications equipment that provides the primary function of the data centre

3.1.3 equipment outlet
fixed connecting device for terminating the zone distribution cabling and providing the interface to the equipment cord