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Interested committees:

Title: Draft BS ISO/IEC 11801-1 Amendment 1 - Information technology - Generic cabling for customer premises. Part 1: General requirements.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



JTC1-SC25/2926/CD

COMMITTEE DRAFT (CD)

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IEC ISO/IEC JTC 1/SC 25 : INTERCONNECTION OF INFORMATION TECHNOLOGY EQUIPMENT

SECRETARIAT:

Germany

SECRETARY:

Mr Marco Peter

OF INTEREST TO THE FOLLOWING COMMITTEES:

SC 46C, SC 48B

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Amendment 1 - Information technology - Generic cabling for customer premises - Part 1: General requirements

NOTE FROM TC/SC OFFICERS:

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Proposed draft Amendment 1 to ISO/IEC 11801-1:2017

FOREWORD

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

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

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

INTRODUCTION

This amendment specifies single pair component Categories T1-A, T1-B, and T1-C, as well as cabling channels and link Classes T1-A, T1-B, and T1-C to support the delivery of single pair applications. Amendment 1 also provides modifications and corrections to ISO/IEC 11801-1:2017.

Editor's Note: Frequency of Class T1-C is ffs.

Proposed draft Amendment 1 to ISO/IEC 11801-1:2017

1 Scope

Replace existing bullet b) by the following:

b) channel transmission, environmental and SELV power delivery performance requirements;

2 Normative references

Insert normative references in alphabetical/numeric order:

IEC 61156-11, *Multicore and symmetrical pair/quad cables for digital communications – Part 11: Symmetrical single pair cables with transmission characteristics up to 600 MHz – Horizontal floor wiring – Sectional specification (in preparation)*

IEC 61156-12, *Multicore and symmetrical pair/quad cables for digital communications – Part 12: Symmetrical single pair cables with transmission characteristics up to 600 MHz – work area wiring – Sectional specification (in preparation)*

IEC 61156-13, *Multicore and symmetrical pair/quad cables for digital communications – Part 13: Symmetrical single pair cables with transmission characteristics up to 20 MHz – horizontal floor wiring – Sectional specification (in preparation)*

IEC 61156-14, *Multicore and symmetrical pair/quad cables for digital communications – Part 14: Symmetrical single pair cables with transmission characteristics up to 20 MHz – work area wiring – Sectional specification (in preparation)*

IEC 63171-1, *Connectors for electronic equipment – Part 1: Copper LC style connector for use with 1-pair balanced twisted pair cabling (in preparation)*

IEC 63171-6, *Connectors for electrical and electronic equipment – Part 6: Detail specification for 2-way and 4-way (data/power), shielded, free and fixed connectors for power and data transmission with frequencies up to 600 MHz (in preparation)*

3 Terms, definitions, abbreviations and symbols

3.1 Terms and definitions

3.2 Abbreviations

Insert, in the existing Table, the following new abbreviations in alphabetical sequence:

SELV	safety extra low voltage
SP	single-pair
SPE	single-pair Ethernet

6 Channel performance requirements

Insert new subclause:

6.6 Single-pair cabling transmission performance

6.6.1 General

This document specifies the following Classes for single-pair balanced cabling:

- a) Class T1-A is specified up to 20 MHz,
- b) Class T1-B is specified up to 600 MHz,
- c) Class T1-C is specified up to 1 250 MHz ffs.

The insertion loss and other length related parameter performance of Class T1-A cabling is further subdivided into four sub-Classes, T1-A-100, T1-A-250, T1-A-400, and T1-A-1000. These sub-Classes have identical performance requirements for all other transmission parameters.

Editor' Note T1-B is backward compatible to T1-A up to 100m.

Editor's Note: Frequency of Class T1-C is ffs.

A Class T1-A channel is specified so that it will provide the minimum transmission performance to support Class T1-A applications. Similarly, Class T1-B, and T1-C, channels provide the transmission performance to support Class T1-B, and T1-C applications, respectively. Channels of a given Class will support all applications of a lower Class with the same length. Class T1-A is regarded as the lowest Class.

Annex E lists known single-pair balanced cabling applications by Class. The requirements in 6.6 are given by limits computed to one decimal place, using the equation for a defined frequency range. The limits for the propagation delay and delay skew are computed to three decimal places. The additional tables are for information only and have limits derived from the relevant equation at key frequencies. Many specifications in 6.6 have a plateau in the specified requirement. These plateaus do not accurately depict the system performance. They have been added for measurement purposes.

Editor's Note: Awaiting answer from IEC cable and measurement group on the treatment of values down to 0,1 MHz.

6.6.2 Component choice

The parameters specified in 6.6 apply to channels with screened or unscreened cable elements, with or without an overall screen, unless explicitly stated otherwise.

The nominal differential mode impedance of channels is 100 Ω . This is achieved by suitable design and appropriate choice of cabling components (irrespective of their nominal impedance).

6.6.3 Channel parameters

6.6.3.1 Return loss

The return loss requirements are applicable to all single pair cabling Classes.

The return loss (RL) of a single pair channel shall meet the requirements in Table 46.

The return loss requirements shall be met at both ends of the cabling. Return loss (RL) values at frequencies where the insertion loss (IL) is below 3,0 dB are for information only.

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Table 46 – Return loss for a single pair channel

Class	Frequency MHz	Minimum return loss dB
T1-A	$0,1 \leq f < 0,5$	$9 + 8(f)$
	$0,5 \leq f < 20$	13,0
T1-B	$0,1 \leq f < 1$	$9 + 10(f)$
	$1 \leq f < 10$	19,0
	$10 \leq f < 40$	$24 - 5 \lg(f)$
	$40 \leq f < 130$	16,0
	$130 \leq f < 400$	$37 - 10 \lg(f)$
	$400 \leq f < 600$	11,0
T1-C	$0,1 \leq f < 1$	$9 + 10(f)$
	$1 \leq f < 10$	19,0
	$10 \leq f < 40$	$24 - 5 \lg(f)$
	$40 \leq f < 130$	16,0
	$130 \leq f < 400$	$37 - 10 \lg(f)$
	$400 \leq f < 600$	11,0
	$600 \leq f < 1\,250$	$39 - 10 \lg(f)$

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Table 47 – Informative return loss values for a single pair channel at key frequencies

Minimum return loss dB			
Frequency MHz	Class		
	T1-A	T1-B	T1-C
0,1	9,8	10,0	–
1	13,0	19,0	19,0
20	13,0	17,5	17,5
100	–	16,0	16,0
250	–	13,0	13,0
500	–	11,0	11,0
600	–	11,0	11,0
1 000	–	–	9,0
1 250	–	–	8,0

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262 6.6.3.2 Insertion loss/attenuation

263 The insertion loss requirements are applicable to all single pair cabling Classes.

264 The insertion loss (*IL*) of a single pair channel shall meet the requirements in Table 48.

265

Table 48 – Insertion loss for a single pair channel

Class	Frequency MHz	Maximum insertion loss ^a dB
T1-A-1000	$0,1 \leq f < 20$	$10 \cdot \left(1,23 \cdot \sqrt{f} + 0,01 \cdot f + \frac{0,2}{\sqrt{f}} \right) + 10 \cdot 0,02 \cdot \sqrt{f}$
T1-A-400	$0,1 \leq f < 20$	$4 \cdot \left(1,23 \cdot \sqrt{f} + 0,01 \cdot f + \frac{0,2}{\sqrt{f}} \right) + 5 \cdot 0,02 \cdot \sqrt{f}$
T1-A-250	$0,1 \leq f < 20$	$2,55 \cdot \left(1,9108 \cdot \sqrt{f} + 0,0222 \cdot f + \frac{0,2}{\sqrt{f}} \right) + 4 \cdot 0,02 \cdot \sqrt{f}$
T1-A-100	$0,1 \leq f < 20$	$1,05 \cdot \left(1,9108 \cdot \sqrt{f} + 0,0222 \cdot f + \frac{0,2}{\sqrt{f}} \right) + 4 \cdot 0,02 \cdot \sqrt{f}$
T1-B	$0,1 \leq f < 600$	$1,05 \cdot \left(1,8 \sqrt{f} + 0,005 f + \frac{0,25}{\sqrt{f}} \right) + 4 \cdot 0,02 \sqrt{f}$
T1-C	$1 \leq f < 1\,250$	$1,05 \cdot \left(1,8 \sqrt{f} + 0,005 f + \frac{0,25}{\sqrt{f}} \right) + 4 \cdot 0,02 \sqrt{f}$
^a Insertion loss (IL) at frequencies that correspond to calculated values of less than 3,0 dB shall revert to a maximum requirement of 3,0 dB.		

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Table 49 – Informative insertion loss values for a single pair channel at key frequencies

Frequency MHz	Maximum insertion loss dB					
	Class					
	T1-A-1000	T1-A-400	T1-A-250	T1-A-100	T1-B	T1-C
0,1	10,3	4,1	3,2	3,0	3,0	–
1	14,6	5,9	5,2	3,0	3,0	3,0
20	58,3	23,4	23,4	9,8	9,0	9,0
100	–	–	–	–	20,3	20,3
250	–	–	–	–	32,5	32,5
500	–	–	–	–	46,7	46,7
600	–	–	–	–	51,4	51,4
1 000	–	–	–	–	–	67,6
1 250	–	–	–	–	–	76,2

6.6.3.3 Direct current (DC) loop resistance

The DC loop resistance requirements are applicable to all single pair cabling Classes.

The DC loop resistance of a single pair channel shall meet the requirements in Table 50.