ISO/IEC 11801
(second edition – 2002)

Information technology –
Generic cabling for customer premises

Amendment 2 (2010)

C O R R I G E N D U M 1

Corrigendum 1 applies to Amendment 2 (2010) of ISO/IEC 11801:2002.

2 Normative references

Replace the existing references by the following:

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 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 61156-6:2010, *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*

Insert the following reference:

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

5.7.5.1 General requirements

Replace the second sentence as follows:

Until ISO/IEC 14763-2 is published, relevant information can be found in ISO/IEC TR 14763-2.

6.4.9 Current carrying capacity

Replace the existing first paragraph by the following paragraph and Table:

The minimum current carrying capacity for channels of Classes D, E, EA, F and FA shall be in accordance with Table 84. This shall be achieved by an appropriate design.

Table 84 – Current carrying capacity for channel

Minimum current carrying capacity A d.c.	**Operating temperature** (t) °C
0,300	$t \leq (T_R - 10)$
0,175	$(T_R - 10) < t \leq T_R$
Where T_R is the lowest maximum operating temperature specified for the components comprising the cabling subsystem.	

7.2.3.2 Dimensions

Replace the existing Table 33 by the following:

Table 33 – Backbone channel length equations

	Implementation equations [a]							
Component Category	**Class A**	**Class B**	**Class C**	**Class D**	**Class E**	**Class E_A**	**Class F**	**Class F_A**
5	2 000	$B = 250 - FX$	$B = 170 - FX$	$B = 105 - FX$	–	–	–	–
6	2 000	$B = 260 - FX$	$B = 185 - FX$	$B = 111 - FX$	$B = 105 - 3^b - FX$	–	–	–
6_A	2 000	$B = 260 - FX$	$B = 189 - FX$	$B = 114 - FX$	$B = 108 - 3^b - FX$	$B = 105 - 3^b - FX$	–	–
7	2 000	$B = 260 - FX$	$B = 190 - FX$	$B = 115 - FX$	$B = 109 - 3^b - FX$	$B = 107 - 3^b - FX$	$B = 105 - 3^b - FX$	–
7_A	2 000	$B = 260 - FX$	$B = 192 - FX$	$B = 117 - FX$	$B = 111 - 3^b - FX$	$B = 110 - 3^b - FX$	$B = 105 - 3^b - FX$	$B = 110 - 3^b - FX$

B the maximum length of the backbone cable (m)

F combined length of patch cords/jumpers and equipment cords (m)

X the ratio of cord cable insertion loss (dB/m) to backbone cable insertion loss (dB/m)

NOTE 1 Where channels contain a different number of connections than in the model shown in Figure 13, the fixed cable length is reduced (where more connections exist) or increased (where fewer connections exist) by 2 m per connection for Category 5 cables and 1 m per connection for Category 6, 6_A, 7 and 7_A cables. Additionally, the *NEXT*, return loss (*RL*) and *ACR-F* performance should be verified.

NOTE 2 For operating temperatures above 20 °C, *B* should be reduced by 0,2 % per °C for screened cables; 0,4 % per °C (20 °C to 40 °C) and 0,6 % per °C (>40 °C to 60 °C) for unscreened cables.

[a] Applications limited by propagation delay or delay skew may not be supported if channel lengths exceed 100 m.

[b] This length reduction is to provide an allocated margin to accommodate insertion loss deviation.

9.2.2.6 Current carrying capacity

Replace the existing first paragraph and table by the following:

The minimum d.c. current carrying capacity shall be as indicated in Table 64.

Table 64 – Current carrying capacity for channel

Minimum current A d.c.	**Operating temperature** (t) °C
0,300	$t \leq (T_R - 10)$
0,175	$(T_R - 10) < t \leq T_R$
Where T_R is the lowest maximum operating temperature specified for the components comprising the cabling subsystem.	

9.4.4 Single mode optical fibre cables

Change in second and third paragraphs “single-mode, fibre complying with” *to* “single-mode, optical fibre waveguide complying with”.

10.1.6 Installation practices

Replace, in the last paragraph before NOTE 1, “ISO/IEC TR 14763-1” *by* “ISO/IEC 14763-1”.

12 Administration

Replace, in the first paragraph, “ISO/IEC TR 14763-1” *by* “ISO/IEC 14763-1”.

B.3 Overview of test regimes

Replace the existing Table B.2 by the following:

Table B.2 – Test regime for reference conformance and installation conformance – Optical fibre cabling

Transmission parameter	Reference conformance testing	Installation conformance testing
Attenuation	N	N
Propagation delay [a]	I	I
Polarity	N	N
Length	I	I
Connector return loss [b]	N	N
where I = Informative (optional) testing. N = Normative (100 %) testing.		
[a] Propagation delay is not a pass/fail criterion. [b] This is a requirement for connecting hardware return loss (see Clause 10).		

F.1 Supported applications for balanced cabling

Replace the entire Table F.1 by the following:

Table F.1 – Applications using balanced cabling

Application	Specification reference	Date	Additional name / reference
Class A (defined up to 0,1 MHz)			
PBX	National requirements		
X.21	ITU-T Rec. X.21	1992	
V.11	ITU-T Rec. X.21	1996	
Class B (defined up to 1 MHz)			
S0-Bus (extended)	ITU-T Rec. I.430	1993	ISDN Basic Access (Physical Layer)
S0 Point-to-Point	ITU-T Rec. I.430	1993	ISD2 Basic Access (Physical Layer)
S1/S2	ITU-T Rec. I.431	1993	ISDN Primary Access (Physical Layer)
Class C (defined up to 16 MHz)			
Ethernet 10BASE-T	IEEE 802.3, Clause 14 [a]	2005	CSMA/CD IEEE 802.3i
Token Ring 4 Mbit/s	ISO/IEC 8802-5	1998	
ATM LAN 25,60 Mbit/s	ATM Forum af-phy-0040.000	1995	ATM-25/Category 3
ATM LAN 51,84 Mbit/s	ATM Forum af-phy-0018.000	1994	ATM-52/Category 3
ATM LAN 155,52 Mbit/s	ATM Forum af-phy-0047.000	1995	ATM-155/Category 3
Class D 1995 (defined up to 100 MHz)			
Token Ring 16 Mbit/s	ISO/IEC 8802-5	1998	IEEE 802.5:1998
ATM LAN 155,52 Mbit/s	ATM Forum af-phy-0015.000	1994	ATM-155/Category 5
Ethernet 100BASE-TX [a,b]	IEEE 802.3, Clause 25 [a]	2005	Fast Ethernet IEEE 802.3u
Token Ring 100 Mbit/s	IEEE 8802-5t	2000	
PoE	IEEE 802.3 af	2005	Power over Ethernet, IEEE 802.3af
Class D 2002 (defined up to 100 MHz)			
Ethernet 1000BASE-T	IEEE 802.3, Clause 40 [a]	2005	Gigabit Ethernet, IEEE 802.3ab
Fibre Channel 1 Gbit/s	ISO/IEC 14165-115	2007	Twisted-pair Fibre Channel 1G
Firewire 100 Mbit/s	IEEE 1394b	2002	Firewire/Category 5
PoE+	IEEE 802.3 at [b]	2009	Power over Ethernet Plus
Class E 2002 (defined up to 250 MHz)			
ATM LAN 1,2 Gbit/s	ATM Forum af-phy-0162.000	2001	ATM-1 200/Category 6
Class E_A 2008 (defined up to 500 MHz)			
Ethernet 10GBASE-T	IEEE 802.3, Clause 44	2006	10Gigabit Ethernet, IEEE 802.3an
Fibre Channel 2 Gbit/s	INCITS 435	2007	Twisted-pair Fibre Channel 2G-FCBASE-T
Fibre Channel 4 Gbit/s	INCITS 435	2007	Twisted-pair Fibre Channel 4G-FCBASE-T
Class F 2002 (defined up to 600 MHz)			
FC 100 MByte/s	ISO/IEC 14165-114	2005	FC-100-DF-EL-S
Class F_A 2008 (defined up to 1 000 MHz)			

[a] Including support for remote power feeding defined by IEEE 802.3af:2003 and IEEE 802.3at:2009.

[b] For channels used to support applications requiring remote power, see ISO/IEC TR 29125.

NOTE 1 Applications supported by a given class are also supported by higher classes. Some applications may run on a lower class in cases where the specific channel in question meets the performance criteria of the application.

NOTE 2 The minimum performance of Class E 2002 channels does not support 10GBase-T. Channels implemented using Category 6 2002 components will support 10GBase-T provided they meet the additional requirements specified in ISO/IEC TR 24750. Such support may be limited to channels shorter than 100 m. Class E_A or better is recommended for new installations.

F.2 Supported applications for optical fibre cabling

Replace the existing first paragraph by the following:

Details of application support are provided for each cabled optical fibre Category included in Clause 9, and additional information is provided in Table F.3, Table F.4 and Table F.5 concerning maximum channel lengths. Cabled optical fibre categories OM1, OM2, OM3, OM4, OS1 and OS2 are described in Clause 9.

Replace, the existing Tables F.3, F.4 and F.5 by the following:

Table F.3 – Supported applications using optical fibre cabling

Network application	Max. channel insertion loss (dB)			ISO/IEC 11801 channel supported by cabled optical fibre Category							
	Multimode [a]		Single-mode	OM1		OM2		OM3/OM4		OS1/OS2	
	850 nm	1 300 nm	1 310 nm	850 nm	1 300 nm	850 nm	1 300 nm	850 nm	1 300 nm	1 310 nm	1 550 nm
IEEE 802-3: 10BASE-FLand FB [b]	12,5(6,8)	–	–	OF-2000		OF-2000		OF-2000			
ISO/IEC TR 11802-4: 4 and 16 Mbit/s Token Ring [b]	13,0(8,0)	–	–	OF-2000		OF-2000		OF-2000			
ATM at 52 Mbit/s [c]	NA	10,0(5,3)	10,0		OF-2000		OF-2000		OF-2000	OF-2000	
ATM at 155 Mbit/s [c]	7,2	10,0(5,3)	7,0	OF-500	OF-2000	OF-500	OF-2000	OF-500	OF-2000	OF-2000	
ATM at 622 Mbit/s [b, c, d]	4,0	6,0(2,0)	7,0	OF-300	OF-500	OF-300	OF-500	OF-300	OF-500	OF-2000	
ISO/IEC 14165-111: Fibre Channel (FC-PH) at 1 062 Mbit/s [c, d]	4,0	–	6,0	OF-300		OF-500		OF-500		OF-2000	
IEEE 802-3: 1000BASE-SX [d]	2,6(3,56)	–	–	[e]		OF-500		OF-500			
IEEE 802-3: 1000BASE-LX [c, d]	–	2,35	4,56		OF-500		OF-500		OF-500	OF-2000	
ISO/IEC 9314-3: FDDI PMD [b]	–	11,0(6,0)	–		OF-2000		OF-2000		OF-2000		
ISO/IEC 9314-4: FDDI SMF-PMD [c]	–	–	10,0							OF-2000	
ISO/IEC 8802-3: 100BASE-FX [b]		11,0(6,0)	–		OF-2000		OF-2000		OF-2000		
IEEE 802.3: 10GBASE-LX4 [c, d]		2,00	6,20		OF-300		OF-300		OF-300	OF-2000	
IEEE 802.3: 10GBASE-ER/EW [c]			10.9								OF-2000
IEEE 802.3: 10GBASE-SR/SW [d]	1,60 (62,5) 1,80 (OM2 50) 2,60 (OM3)	–	–					OF-300			
IEEE 802.3: 10GBASE-LR/LW [c]	–	–	6,20							OF-2000	
IEEE 802.3: 40GBASE-SR4 [d]	1,9 (OM3) 1,5 (OM4)	–	-.								
IEEE 802.3: 40GBASE-LR4 [c]	–	–	6,7							OF-2000	
IEEE 802.3: 100GBASE-SR4 [d]	1,9 (OM3) 1,5 (OM4)	–	-.								

Network application	Max. channel insertion loss (dB)			ISO/IEC 11801 channel supported by cabled optical fibre Category							
	Multimode [a]		Single-mode	OM1		OM2		OM3/OM4		OS1/OS2	
	850 nm	1 300 nm	1 310 nm	850 nm	1 300 nm	850 nm	1 300 nm	850 nm	1 300 nm	1 310 nm	1 550 nm
IEEE 802.3: 100GBASE-LR4 [c]	–	–	8,3							OF-2000	
IEEE 802.3: 100GBASE-ER4	–	–	18,0							OF-2000	
1 Gbit/s FC (1.0625 GBd) [c, d]	3,85 (OM2 50) 2,62 (OM3)	–	7,8			OF-500		OF-500		OF-2000	
2 Gbit/s FC (2,125 GBd) [c, d]	2,1 (OM1 50) 2,62 (OM2 50) 3,31 (OM3)	–	7,8			OF-300		OF-300		OF-2000	
4 Gbit/s FC (4,25 GBd) [c, d]	2,06 (OM2 50) 2,88 (OM3) 3,02 (OM4)	–	4,8					OF-300		OF-2000	
8 Gbit/s FC (8,5 GBd) [c, d]	1,68 (OM2 50) 2,19 (OM3) 2,22 (OM4)	–	6,4							OF-2000	
16 Gbit/s FC (14,025 GBd) [c, d]	1,63 (OM2 50) 1,95 (OM3) 1,97 (OM4)	–	6,4							OF-2000	

[a] The values shown are for both 62,5/125 and 50/125 MMF, where the values differ the 50/125 values are shown in parentheses.

[b] The channel length may be limited on 50 μm optical fibre. See the relevant application standard for details.

[c] The channel length on single-mode optical fibre may be longer but lies outside the scope of this standard. See the relevant application standard for details.

[d] A bandwidth-limited application at the channel lengths shown. The use of lower attenuation components to produce channels exceeding the values shown cannot be recommended.

[e] See Table F.4.

Table F.4 – Maximum channel lengths supported by optical fibre applications for multimode optical fibre

Network application	Nominal transmission wavelength nm	Maximum channel length m	
		50/125 μm optical fibre	62,5/125 μm optical fibre
IEEE 802-3: FOIRL	850	514	1 000
IEEE 802-3:10BASE-FL & FB	850	1 514	2 000
ISO/IEC TR 11802-4: 4 & 16 Mbit/s Token Ring	850	1 857	2 000
ATM at 155 Mbit/s	850	1 000 [b]	1 000 [a]
ATM at 622 Mbit/s	850	300 [b]	300 [a]
ISO/IEC 14165-111: Fibre Channel (FC-PH) at 1 062 Mbit/s [d]	850	500 [b]	300 [a]
IEEE 802.3: 1000BASE-SX [d]	850	550 [b]	275 [a]
IEEE 802.3: 10GBASE-SR [d]	850	300 [c]	
IEEE 802.3: 40GBASE-SR4 [d]	850	100 [c] , 150 [f]	
IEEE 802.3: 100GBASE-SR10 [d]	850	100 [c] , 150 [f]	
1 Gbit/s FC (1,0625 GBd) [d]	850	500	300 [b]
2 Gbit/s FC (2,125 GBd) [d]	850	150 [a], 300 [b]	
4 Gbit/s FC (4,25 GBd) [d]	850	150[b], 380[c], 420[e]	-
8 Gbit/s FC (8,5 GBd) [d]	850	50[b], 150[c], 190[e]	
16 Gbit/s FC (14,025 GBd) [d]	850	35[b], 100[c], 125[e]	
ISO/IEC 9314-3: FDDI PMD	1 300	2 000	2 000
IEEE 802-3: 100BASE-FX	1 300	2 000	2 000
IEEE 802.5t: 100 Mbit/s Token Ring	1 300	2 000	2 000
ATM at 52 Mbit/s	1 300	2 000	2 000
ATM at 155 Mbit/s	1 300	2 000	2 000
ATM at 622 Mbit/s	1 300	330	500
IEEE 802.3: 1000BASE-LX [d]	1 300	550 [b]	550 [a]
IEEE 802.3: 10GBASE-LX4 [d]	1 300	300 [a]	300 [a]

[a] Minimum cabled optical fibre performance of category OM1 is specified.

[b] Minimum cabled optical fibre performance of category OM2 is specified.

[c] Minimum cabled optical fibre performance of Category OM3 is specified.

[d] These applications are bandwidth limited at the channel lengths shown. The use of lower attenuation components to produce channels exceeding the values shown cannot be recommended.

[e] Minimum cabled optical fibre performance of Category OM4 is specified.

[f] Minimum cabled optical fibre performance of Category OM4 is specified (subject to a maximum total connecting hardware loss of 1,0 dB).

Table F.5 – Maximum channel length supported by optical fibre applications for single-mode optical fibre

Network application	Nominal transmission wavelength nm	Maximum channel length m
ISO/IEC 9314-4: FDDI SMF-PMD	1 310	2 000
ATM at 52 Mbit/s	1 310	2 000
ATM at 155 Mbit/s	1 310	2 000
ATM at 622 Mbit/s	1 310	2 000
ISO/IEC 14165-111: Fibre Channel (FC-PH) at 1 062 Mbit/s	1 310	2 000
IEEE 802.3: 1000BASE-LX	1 310	2 000
IEEE 802.3: 40GBASE-LR4	1 310	2 000
IEEE 802.3: 100GBASE-LR4	1 310	2 000
1 Gbit/s/s FC (1,0625 GBd)	1 310	2 000
2 Gbit/s/s FC (2,125 GBd)	1 310	2 000
4 Gbit/s/s FC (4,25 GBd)	1 310	2 000
8 Gbit/s/s (8,5 GBd)	1 310	2 000
16 Gbit/s/s (14,025 GBd)	1 310	2 000
10 Gbit/s/s FC	1 310	f.f.s.
IEEE 802.3: 10GBASE-LR/LW	1 310	2 000
1 Gbit/s/s FC	1 550	2 000
2 Gbit/s/s FC	1 550	2 000
IEEE 802.3: 10GBASE-ER/EW	1 550	2 000
IEEE 802.3: 100GBASE-ER4	1 550	1 550

Bibliography

Delete the following reference:

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

Add a footnote to the following reference:

ISO/IEC 14763-2, *Information technology – Implementation and operation of customer premises cabling – Part 2: Planning and installation*[1]

[1] This International Standard is planned to be published in 2011. Consult the IEC and/or ISO website for the availability of this standard.