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AMENDMENT 1

Information technology – Generic cabling – Industrial premises

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FOREWORD

Amendment 1 to International Standard ISO/IEC 24702 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

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6.2.2 Environmental classification

Replace the second paragraph of this subclause by the following new text:

Certain environments (e.g. nuclear, chemical, fire, explosive, damage risk from animals, salt mist) demand additional requirements beyond those of this clause. Further details on specific environments are given in ISO/IEC TR 29106.

Table 2 – Details of environmental classification

Replace the row starting with EFT/B (comms) by the following new row:

EFT/B (comms)	500 V	500 V	1 000 V

6.3.3.1 General

Replace the second and third paragraphs including all the bullet points by the following:

This International Standard uses the optical fibre cabling channel Classes of clause 8 of ISO/IEC 11801 (2002), that is:

- Class OF-300 channels support applications listed in Annex E using cabled all-silica optical fibres in accordance with 8.4.1 to a minimum of 300 m;
- Class OF-500 channels support applications listed in Annex E using cabled all-silica optical fibres in accordance with 8.4.1 to a minimum of 500 m;
- Class OF-2000 channels support applications listed in Annex E using cabled all-silica optical fibres in accordance with 8.4.1 to a minimum of 2 000 m.

In addition, this standard specifies the following Classes for optical fibre cabling channels:

- Class OF-25 channels support applications listed in Annex E using cabled plastic optical fibre in accordance with 8.4.2 to a minimum of 25 m;
- Class OF-50 channels support applications listed in Annex E using cabled plastic optical fibre in accordance with 8.4.2 to a minimum of 50 m;
- Class OF-100 channels support applications listed in Annex E using cabled plastic or plastic clad silica optical fibres in accordance with 8.4.2 and 8.4.3 respectively to a minimum of 100 m;
- Class OF-200 channels support applications listed in Annex E using cabled plastic or plastic clad silica optical fibres in accordance with 8.4.2 and 8.4.3 respectively to a minimum of 200 m;
- Class OF-5000 channels support applications listed in Annex E using cabled all-silica optical fibres in accordance with 8.4.1 to a minimum of 5 000 m;

- Class OF-10000 channels support applications listed in Annex E using cabled all-silica optical fibres in accordance with 8.4.1 to a minimum of 10 000 m.

Table 9 Channel attenuation of optical fibre cabling channels

Replace Table 9 by the following new Table 9:

Class	Cabled optical fibre Category	Maximum channel attenuation dB				
			650 nm	850 nm	1 300 nm	1 550 nm
OF-25	OP1 (see Note 1)		7,5	-	-	-
OF-50	OP1 (see Note 1)		12,0	-	-	-
OF-100	OP2		13,0	6,3	6,3	-
	OH1		-	4,0	-	-
OF-200	OP2		23,0	9,6	9,6	-
	OH1		-	5,0	-	-
OF-300	OM1, OM2, OM3, OS1, OS2	As per ISO 11801				
OF-500	OM1, OM2, OM3, OS1, OS2					
OF-2000	OM1, OM2, OM3, OS1, OS2					
OF-5000	OS2		-	-	4,0 (see Note 2)	4,0
OF-10000	OS2		-	-	6,0 (see Note 2)	6,0
NOTE 1 The modal conditions under which the measurement is made are ffs.						
NOTE 2 For singlemode channels the nominal wavelength is 1 310 nm.						

7.3.1 General

Replace the two paragraphs of this subclause by the following new paragraphs:

Optical fibre channels shall be comprised of components that comply with Clauses 8, 9 and 10. These clauses specify physical construction (core/cladding diameter and numerical aperture) and transmission performance. Within the reference implementations of this clause, the cabled optical fibres used in each cabling channel shall have the same specification.

When more than one physical construction or cabled optical fibre Category is used in a cabling subsystem the cabling shall be marked to allow each cabling type to be clearly identified.

Table 10 – Optical fibre channel length equivalence for connecting hardware

Replace Table 10 by the following new Table 10:

Cabled optical fibre Category	Applicable channel Class	Channel length differential m					
		Wavelength	**650 nm**	**850 nm**	**1 300 nm**	**1 310 nm**	**1 550 nm**
OP1	OF-25, OF-50	Mated connection	8,3	–	–	–	–
		Splice	–	–	–	–	–
OP2	OF-25, OF50, OF-100, OF-200	Mated connection	15,0	46,0	46,0		
		Splice	–	–	–		
OH1	OF-100, OF-200	Mated connection	–	150,0	–	–	–
		Splice	–	–	–	–	–
OM1/OM2/ OM3	OF-300, OF-500, OF-2000	Mated connection	–	214,0	500,0	–	–
		Splice	–	86,0	200,0	–	–
OS1	OF-300, OF-500, OF-2000	Mated connection	–	–	–	750,0	750,0
		Splice	–	–	–	300,0	300,0
OS2	OF-300, OF-500, OF-2000, OF-5000, OF-10000	Mated connection	–	–	–	1 875,0	1 875,0
		Splice	–	–	–	750,0	750,0

8.4.1 All-silica optical fibre cables

Replace the first three paragraphs and Table 12 by the following three paragraphs and Table:

Cabled multimode optical fibres shall meet the requirements of Categories OM1, OM2 or OM3 cable referenced in ISO/IEC 11801 as appropriate in conjunction with a completed detail specification based upon those within IEC 60794-2 or IEC 60794-3, as appropriate.

Cabled singlemode optical fibres shall meet the requirements of Category OS1 specified in ISO/IEC 11801 or Category OS2 specified in Table 12 as appropriate in conjunction with a completed detail specification based upon those within IEC 60794-2 or IEC 60794-3, as appropriate.

Detail specifications based upon the blank detail specifications within IEC 60794-2 or IEC 60794-3 shall be used to specify cable performance requirements under the environmental classifications of Table 2. Table 13 shows the elements of Table 2 that are not covered by these blank detail specifications and which have to be specified separately.

Table 12 – Performance requirements for Category OS2 cabled singlemode optical fibre

Wavelength nm	**Maximum attenuation** dB/km
1 310	0,4
1 383	0,4
1 550	0,4
NOTE 1 The optical fibre shall comply with B1.3 fibre of IEC 60793-2-50. NOTE 2 The attenuation shall be measured in accordance with IEC 60793-1-40. NOTE 3 The cut-off wavelength of singlemode optical fibre cables shall be less than 1 260 nm when measured in accordance with IEC 60793-1-44.	

8.4.2 Plastic optical fibre cables

Replace the first two paragraphs and Table 14 by the following two paragraphs and Table:

The optical fibre used to produce cabled optical fibre of Category OP1 shall be multimode, plastic optical fibres with a nominal cladding diameter of 1 000 µm in accordance with A4a.2 fibre of IEC 60793-2-40. The cabled optical fibres shall meet the performance requirements of Table 14. Attenuation shall be measured in accordance with IEC 60793-1-40.

The optical fibre used to produce cabled optical fibre of Category OP2 shall be multimode, plastic optical fibres with a nominal cladding diameter of 490 µm in accordance with A4g fibre of IEC 60793-2-40. The cabled optical fibres shall meet the performance requirements of Table 14. Attenuation shall be measured in accordance with IEC 60793-1-40.

Table 14 – Plastic and plastic clad silica optical fibre cable performance requirements

Category	**Maximum attenuation** dB/km (see Note 1)			**Minimum modal bandwidth** MHz × km (see Note 2)		
	650 nm	**850 nm**	**1 300 nm**	**650 nm**	**850 nm**	**1 300 nm**
OP1 (See Note 3)	180	na	na	4	na	na
OP2	100	33	33	80	188	188
OH1	ffs	10	ffs	ffs	5	ffs
NOTE 1 Although the attenuation values are quoted in dB/km, the qualification measurement may be undertaken using 100 m lengths. NOTE 2 Modal bandwidth requirements apply to the optical fibre used to produce the relevant cabled optical fibre Category and are assured by the parameters and test methods specified in IEC 60793-2-40. Although the modal bandwidth values are quoted in MHz × km, the qualification measurement may be undertaken using100 m lengths. NOTE 3 Launch condition N.A. = 0,3.						
na = not aplicable ffs = for further study						

8.4.3 Plastic clad silica optical fibre cables

Replace the first paragraph of this subclause by the following:

The optical fibre used to produce cabled optical fibre of Category OH1 shall be multimode optical fibre with nominal 200/230 µm core/cladding diameter complying with A3c fibre of

IEC 60793-2-30. The cabled optical fibres shall meet the performance requirements of the Category OH1 in Table 14. Attenuation shall be measured in accordance with IEC 60793-1-40.

9.5.1 Operating environment

Replace the paragraph before Table 16 by the following:

Connecting hardware shall meet the mechanical performance requirements of ISO/IEC 11801 and the transmission performance requirements of this clause as appropriate in conjunction with the performance requirements detailed in Table 16 for the relevant environmental classifications of Table 2.

E.2 Supported applications for optical fibre cabling

Replace the fourth, fifth and sixth paragraphs by the following:

Table E.1 contains detailed information of the greatest channel lengths supported by process monitoring and control applications for each recognised cabled all-silica multimode optical fibre category.

Table E.2 contains detailed information of the greatest channel lengths supported by process monitoring and control applications for each recognised cabled all-silica singlemode optical fibre category.

Table E.3 contains detailed information of the greatest channel lengths supported by process monitoring and control applications for each recognised cabled plastic optical fibre category.

Table E.1 – Supported applications and maximum channel lengths with all-silica multimode optical fibres

Replace the table title by the following new title:

Table E.1 – Supported applications and maximum channel lengths with cabled all-silica multimode optical fibres

Table E.2 – Supported applications and maximum channel lengths with all-silica singlemode optical fibres

Replace the table title by the following new title:

Table E.2 – Supported applications and maximum channel lengths with cabled all-silica singlemode optical fibres

Table E.3 – Supported applications and maximum channel lengths with plastic optical fibres

Replace the table title and table by the following:

Table E.3 – Supported applications and maximum channel lengths with cabled plastic optical fibres

	λ nm	Core diameter µm	OP1		
Network application			**CIL** [a] dB	**L** [b] m	**Class**
Profibus v2.0 July 1999	650	–	9,0	25	OF-25
Profibus (enhanced) v2.0 July 1999	650	–	14,0	50	OF-50
Interbus-S August 2000	650	–	17,2	50	OF-50

[a] CIL is the maximum channel insertion loss (or optical power budget, as applicable) as defined in the application standard.

[b] L is the lower of either the maximum channel length specified in the application standard or a calculated length from the CIL with 3,0 dB allocated to connecting hardware.

Annex F – Introduction to environmental classification in clause 6

Delete the entire Annex F.

Bibliography

Insert the following new reference:

ISO/IEC TR 29106, *Information technology – Generic cabling – Introduction to the MICE environmental classification*