



SLOVENSKI STANDARD
oSIST prEN 50411-6-1:2021
01-april-2021

Sistemi za upravljanje z optičnimi vlakni in zaščitna ohišja za optične komunikacijske sisteme - Specifikacije izdelka - 6-1. del: Nezaščiteni mikrokanal kategorij S in A

Fibre management systems and protective housings to be used in optical fibre communication systems - Product specifications - Part 6-1: Unprotected microduct for category S and A

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Systèmes de gestion des fibres et boîtiers de protection destinés à être utilisés dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 6-1 : Microconduits non protégés pour les catégories S et A

Ta slovenski standard je istoveten z: prEN 50411-6-1

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 50411-6-1

January 2021

ICS

Will supersede EN 50411-6-1:2011 and all of its
amendments and corrigenda (if any)

English Version

**Fibre management systems and protective housings to be used
in optical fibre communication systems - Product specifications -
Part 6-1: Unprotected microduct for category S and A**

Systèmes de gestion des fibres et boîtiers de protection
destinés à être utilisés dans les systèmes de
communication par fibres optiques - Spécifications de
produits - Partie 6-1 : Microconduits non protégés pour les
catégories S et A

To be completed

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2021-04-23.

It has been drawn up by CLC/TC 86BXA.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German).

A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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33 European foreword

34 This document (prEN 50411-6-1:2021) has been prepared by CLC/TC 86BXA "Fibre optic interconnect,
35 passive and connectorised components".

36 This document is currently submitted to the Enquiry.

37 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 12 months (to be confirmed or modified when voting)

38 This document will supersede EN 50411-6-1:2011 and all of its amendments and corrigenda (if any).

39 prEN 50411-6-1:2021 includes the following significant technical changes with respect to
40 EN 50411-6-1:2011:

- 41 — updated reference of cable tests EN 60794-1-21;
- 42 — more variants with different nominal outer and inner diameter added that are available on the
43 market;
<https://standards.iteh.ai/catalog/standards/sist/ec7c2574-9d33-426d-b082-37447778b037/osist-pren-50411-6-1-2021>
- 44 — updated the tests and test severities according to the new edition EN IEC 61753-1:2018.

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45 **1 Scope**46 **1.1 Product definition**

47 This document contains the initial, start of life dimensional, mechanical and environmental performance
48 requirements which an unprotected microduct are expected to meet.

49 **1.2 Operating environment**

50 The tests selected combined with the severities and duration are representative of an outside plant for
51 subterranean and/or aerial environment defined by:

- 52 — ETS 300 019 class 8.1 - underground locations (without earthquake requirement);
- 53 — EN IEC 61753-1 - category A (aerial environment) and category S (subterranean environment).

54 **1.3 Quality assurance**

55 Compliance with this document does not guarantee the manufacturing consistency of the product. This
56 is expected to be maintained using a recognized quality assurance programme.

57 **1.4 Allowed product types**

58 This document covers all European Standards on optical fibre unprotected microducts. This includes,
59 but is not limited to, EN 60794-5, *Optical fibre cables - Part 5: Sectional specification - Microduct cabling*
60 *for installation by blowing*.

61 **1.5 Allowed microduct connector types**

62 This microduct standard allows the use of all European Standard microduct connectors, including:
63 straight, reducer/enlarger stem, reducer/enlarger, close down, liquid block, liquid block with barb end,
64 and end stop connectors. This includes EN 50411-2-8, *Fibre organizers and closures to be used in*
65 *optical fibre communication systems - Product specifications - Part 2-8: Microduct connectors, for air*
66 *blown optical fibres, Type 1*.

67 **2 Normative references**

68 The following documents are referred to in the text in such a way that some or all of their content
69 constitutes requirements of this document. For dated references, only the edition cited applies. For
70 undated references, the latest edition of the referenced document (including any amendments) applies.

71 EN 590, *Automotive fuels - Diesel - Requirements and test methods*

72 EN 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat (IEC 60068-2-2)*

73 EN 60794-1-21, *Optical fibre cables - Part 1-21: Generic specification - Basic optical cable test*
74 *procedures - Mechanical tests methods (IEC 60794-1-21)*

75 EN 61300-2-34, *Fibre optic interconnecting devices and passive components - Basic test and*
76 *measurement procedures - Part 2-34: Tests - Resistance to solvents and contaminating fluids of*
77 *interconnecting components and closures (IEC 61300-2-34)*

78 EN 61300-3-1, *Fibre optic interconnecting devices and passive components - Basic test and*
79 *measurement procedures - Part 3-1: Examinations and measurements - Visual examination*
80 *(IEC 61300-3-1)*

81 3 Terms and definitions

82 For the purposes of this document, the following terms and definitions apply.

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

84 — IEC Electropedia: available at <http://www.electropedia.org/>

85 — ISO Online browsing platform: available at <https://www.iso.org/obp>

86 3.1

87 **unprotected microduct**

88 small, flexible, lightweight tube with an outer diameter typically less than or equal to 16 mm

89 Note 1 to entry: Unprotected microducts are designed to be contained within a loose or tight outer layer to
90 form a protected microduct.

91 3.2

92 **protected microduct**

93 one or more microducts surrounded by a protective sheath and/or protected by a duct/sub-duct

94 Note 1 to entry: Alternatively a microduct may be regarded as protected if it has a sufficient wall thickness.

95 3.3

96 **microduct optical fibre cable**

97 optical fibre cable suitable for installation by blowing into a microduct

98 3.4

99 **microduct fibre unit**

100 fibre unit that is suitable for installation by blowing into a microduct

101 Note 1 to entry: It differs from a microduct optical fibre cable in that it provides less protection to the fibres
102 that it contains.

103 3.5

104 **burst pressure**

105 point at which the microduct fails to contain pressure

106 3.6

107 **low friction surface**

108 smooth or ribbed internal layer with the purpose of reducing the friction coefficient between microduct
109 and cable/fibre unit

110 3.7

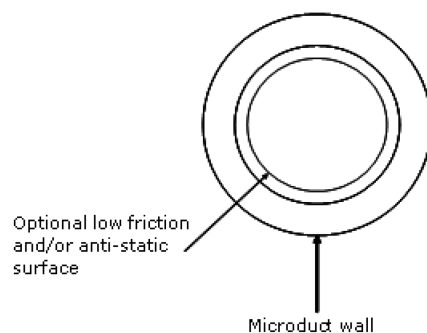
111 **anti-static surface**

112 internal layer with the purpose of reducing the antistatic forces between the microduct and the cable/fibre
113 unit

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114 **4 Description**

115 **4.1 Unprotected microduct**



116

117 **Figure 1 — Cross section of typical unprotected microduct**

118 **4.2 Microduct functions**

119 An unprotected microduct is designed to contain one or more fibre units or optical cables.

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120 **5 Variants**

121

Table 1 — Unprotected microduct variants**EN 50411-6-1 – X₁/X₂**

X₁ Nominal outer diameter (mm)	X₂ Nominal inner diameter (mm)
3,0	2,1
4,0	2,1
4,0	2,5
4,0	3,0
5,0	2,1
5,0	3,5
6,0	2,7
6/4	4,0
7,0	3,5
7,0	4,0
7,0	5,5
8,0	3,5
8,0	4,0
8,0	4,5
8,0	5,0
8,0	6,0
10,0	6,0
10,0	8,0
12,0	8,0
12,0	9,0
12,0	9,4
12,0	10
14,0	10,0
14,0	11,0
14,0	11,4
15,0	12,0
16,0	10,0
16,0	12,0
16,0	13,0

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122 **6 Dimensions of unprotected microduct**123 **6.1 Outer and inner diameters**

124 The outer and inner diameters of unprotected microduct shall be in accordance with Table 2. The
 125 tolerance of outer and inner diameters shall be $\pm 0,1$ mm for microducts with an outer diameter
 126 of ≤ 8 mm and $\pm 0,2$ mm for the outer diameters of microducts > 8 mm up to and including 16 mm outer
 127 diameter (the inner diameter tolerance remains at $\pm 0,1$ mm). The method used to determine microduct
 128 size shall not change the geometry of the product.

129 **Table 2 — Unprotected microduct dimensions**

Variant X_1/X_2 mm	Minimum outer diameter mm	Maximum outer diameter mm	Minimum wall thickness mm	Minimum inner diameter mm
3/2,1	2,9	3,1	0,45	2,0
4/2,1	3,9	4,1	0,95	2,0
4/2,5	3,9	4,1	0,75	2,4
4/3	3,9	4,1	0,60	2,7
5/2,1	4,9	5,1	1,45	2,0
5/3,5	4,9	5,1	0,75	3,4
6/2,7	5,9	6,1	1,55	2,6
6/4	5,9	6,1	1,00	3,9
7/3,5	6,9	7,1	1,75	3,4
7/4	6,8	7,2	1,45	3,9
7/5,5	6,9	7,1	0,75	5,4
8/3,5 ^a	7,9	8,1	2,25	3,4
8/4	7,9	8,1	2,0	3,9
8/5	7,9	8,1	1,5	4,9
8/6	7,9	8,1	1,00	5,9
8,5/6	8,4	8,6	1,25	5,9
10/6 ^a	9,8	10,2	1,95	5,9
10/8	9,8	10,2	0,95	7,9
12/8 ^a	11,8	12,2	1,95	7,9
12/9	11,8	12,2	1,45	8,9
12/9,4	11,8	12,2	1,25	9,3
12/10	11,8	12,2	0,95	9,9
14/10 ^a	13,8	14,2	1,95	9,9
14/11	13,8	14,2	1,45	10,9
14/11,4	13,8	14,2	1,25	11,3
15/12	14,8	15,2	1,45	11,9