SLOVENSKI STANDARD
oSIST prEN 50411-3-3:2018

01-december-2018

Sistemi upravljanja z vlakni in zaščitna ohišja za optične komunikacijske sisteme - Specifikacije izdelka - 3-3. del: Ščitniki spojev enorodnih optičnih vlaken

Fibre management systems and protective housings to be used in optical fibre communication systems - Product specifications - Part 3-3: Singlemode optical fibre fusion splice protectors

LWL-Spleißkassetten und -Muffen für die Anwendung in LWL-Kommunikationssystemen - Produktnormen - Teil 3-3: Fusionsspleißschutze für Einmodenfasern

Organiseurs et boîtiers de fibres destinés à être utilisés dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 3-3: Protecteurs d'épissures par fusion de fibres optiques unimodales

Ta slovenski standard je istoveten z: **prEN 50411-3-3:2018**

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices

oSIST prEN 50411-3-3:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 50411-3-3

October 2018

ICS 33.180.20

Will supersede EN 50411-3-3:2011

English Version

Fibre management systems and protective housings to be used in optical fibre communication systems - Product specifications - Part 3-3: Singlemode optical fibre fusion splice protectors

Organiseurs et boîtiers de fibres destinés à être utilisés dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 3-3: Protecteurs d'épissures par fusion de fibres optiques unimodales

LWL-Spleißkassetten und -Muffen für die Anwendung in LWL-Kommunikationssystemen - Produktnormen - Teil 3-3: Fusionsspleißschutze für Einmodenfasern

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2019-01-04.

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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (prEN 50411-3-3:2018) has been prepared by CLC/TC 86BXA “Fibre optic interconnect, passive and connectorised components”.

This document is currently submitted to the Enquiry.

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)

This document will supersede EN 50411-3-3:2011.

prEN 50411-3-3:2018 includes the following significant technical changes with respect to EN 50411-3-3:2011:

— terms and definitions are added;

— the IEC 61753-1:2007 category U tests and test severities are replaced by the IEC 61753-1:2018 category OP test and test severities;

— a 23 mm length variant has been added to the variant XX_3;

— the colour coding variant XX_6 is harmonized with EN 60304;

— tolerance of height and width increased to ± 0,1 mm for variant S1-12 and ± 0,15 mm for S1-16

— requirement added of a transparent heatshrink splice protector to allow the visual centring of the fused fibre area in the splice protector.

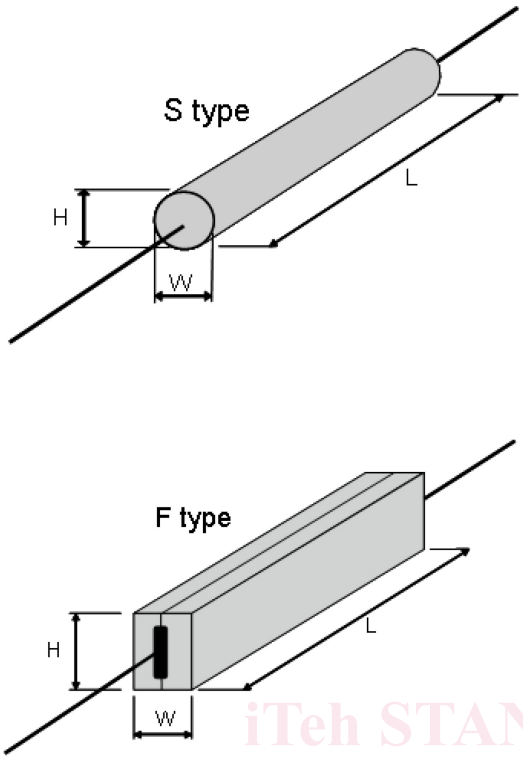
Fibre management systems and protective housings to be used in optical fibre communication systems - Product specifications	
Part 3–3: Singlemode optical fibre fusion splice protectors	
Description	**Performance**
Type: Fibre splice protector	Application: EN IEC 61753-1:201X, Category OP
Style: Fusion	
Operating wavelength: 1 260 nm to 1 625 nm	Attenuation grades: Maximum allowed change in attenuation ≤ ± 0,2 dB for 5 protected fusion splices placed in series
Fibre category: EN 60793-2-50	Return loss grades: Not applicable

Related documents:

EN 60793-2-50	Optical fibres – Part 2–50: Product specifications – Sectional specification for class B single-mode fibres (IEC 60793-2-50)
EN 61300 series	Fibre optic interconnecting devices and passive components – Basic test and measurement procedures (IEC 61300 series)
EN IEC 61753-1:201X[1)]	Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards (IEC 61753-1:201X)

[1)] To be published.

Outline and nominal dimensions:



Product as installed or fully recovered				
Type	**Fibre**	*W* mm	*H* mm	*L* **Available lengths** mm
F1	Single fibre	1,2	3,2	30
S1-12	Single fibre	1,25	1,25	15/20/25/30
S1-13	Single fibre	1,3	1,3	15/20/25/30
S1-16	Single fibre	1,6	1,5	15/20/25/30/40
S1-22	Single fibre	2,2	2,2	25/30/35/40/45
S1-24	Single fibre	2,4	2,4	20/23/25/35/40/45/60
S1-26	Single fibre	2,6	2,6	23/35/40/45/60
S1-32	Single fibre	3,2	3,2	45/60
S1-37	Single fibre	3,7	3,7	68
S2-37	Ribbon 4	3,7	3,5	40/45
S3-40	Ribbon 8	4,0	3,7	40/45
S4-45	Ribbon 12	4,5	4,0	25/30/40/45

1 Scope

1.1 Product definition

This document contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements, which a single mode fusion splice protector need to meet in order for it to be categorized as an EN standard product.

Although in this document the product is qualified for EN 60793-2-50 type B1.3 single mode fibres it is also suitable for fusion splice protection of multimode fibre with 125 µm diameter glass cladding and other single mode fibres with 125 µm diameter glass cladding.

1.2 Interoperability

The installed fusion splice protector needs to fit into optical fibre splice cassettes or splice trays. This European Standard specifies the following physical interface dimensions:

— cross sectional profile with width, height or diameter (in millimetres);

— length (in millimetres).

1.3 Expected performance

In this document, the performance of the fusion splice protector is given with selected fibres as specified in Annex A.

1.4 Operating environment

The tests selected combined with the severities and durations are representative of an outdoor enclosed environment defined as category OP in EN IEC 61753-1:201X. The “assembly and disassembly” and the “dust” tests are not included since they are not relevant once the product is installed. To ensure that the product can be used in outdoor closures, boxes or street cabinets for categories A, G or S (as defined in EN IEC 61753-1:201X) the specified lower temperature is extended to −40 °C and a water immersion requirement for temporary flooding conditions has been added.

1.5 Reliability

Whilst the anticipated service life expectancy of the product in this environment is at least 20 years, compliance with this specification does not guarantee the reliability of the product. This should be predicted using a recognized reliability assessment programme.

1.6 Quality assurance

Compliance with this specification does not guarantee the manufacturing consistency of the product. This should be maintained using a recognized quality assurance programme.

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.

EN 60304, *Standard colours for insulation for low-frequency cables and wires (IEC 60304)*

EN 60793-2-50, *Optical fibres — Part 2-50: Product specifications — Sectional specification for class B single-mode fibres (IEC 60793-2-50)*

EN 61300-1, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 1: General and guidance (IEC 61300-1)*

EN 61300-2-1, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-1: Tests - Vibration (sinusoidal) (IEC 61300-2-1)*

EN 61300-2-4, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-4: Tests - Fibre/cable retention (IEC 61300-2-4)*

EN 61300-2-5, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-5: Tests - Torsion (IEC 61300-2-5)*

EN 61300-2-7, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-7: Tests - Bending moment (IEC 61300-2-7)*

EN 61300-2-9, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-9: Tests - Shock (IEC 61300-2-9)*

EN 61300-2-17, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-17: Tests - Cold (IEC 61300-2-17)*

EN 61300-2-18, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-18: Tests - Dry heat - High temperature endurance (IEC 61300-2-18)*

EN 61300-2-22, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-22: Tests - Change of temperature (IEC 61300-2-22)*

EN 61300-2-26, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-26: Tests - Salt mist (IEC 61300-2-26)*

EN 61300-2-45, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-45: Tests - Durability test by water immersion (IEC 61300-2-45)*

EN 61300-2-46, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-46: Tests — Damp heat cyclic (IEC 61300-2-46)*

EN 61300-3-3, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-3: Examinations and measurements - Active monitoring of changes in attenuation and return loss (IEC 61300-3-3)*

EN 61300-3-28, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-28: Examinations and measurements - Transient loss (IEC 61300-3-28)*

EN IEC 61753-1:201X, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards (IEC 61753-1:201X)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses:

• IEC Electropedia: available at http://www.electropedia.org/

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

3.1
live fibre
fibre optical circuit that is carrying an optical signal

[SOURCE: EN 61756-1 Ed2]

3.2
fibre splice
permanent or separable joint whose purpose is to couple optical power between two optical fibres, achieved by either a fusion or a mechanical technique

[SOURCE: IEV 731-05-05 modified]

4 Description

4.1 Fusion splice protector

4.1.1 General

A single mode fibre fusion splice protector is a passive component, which provides mechanical and environmental protection to a single fibre or ribbon fibre fusion splice. The fused fibres are protected against ingress of dust or temporary flooding by a sealing material, generally a polymer material such as hot melt adhesive or mastic.

The products described in this standard are based on various protection types:

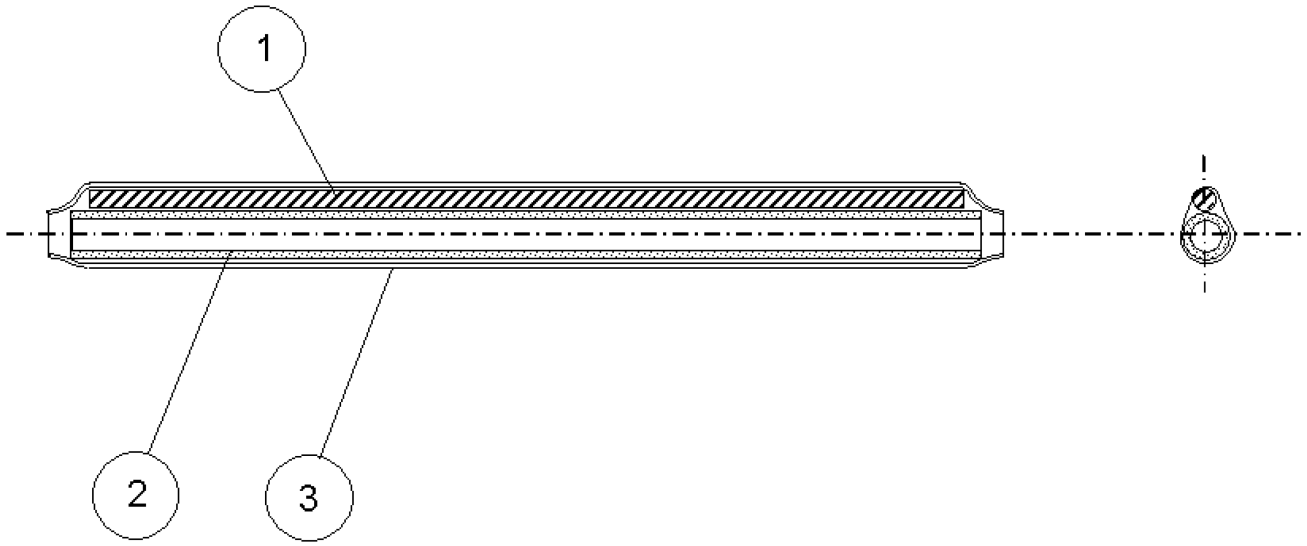
— heat shrinkable splice protector;

— crimp or fold-over splice protector (also called clam shell splice protector).

4.1.2 Heat shrinkable splice protector type

Prior to splicing, the splice protector is put over one of the fibre or ribbon ends. After the fusion of the fibres, the splice protector is placed over the spliced area. After visual centring over the fused area the splice protector is shrunk using heating equipment.

A typical fusion splice protector is composed of three elements (see Figure 1).



Key

1 a reinforcement member to give rigidity after the protector is installed in the heater;

2 an adhesive tube that will encapsulate the spliced region and bonds directly to the bare glass and primary or secondary coating of the fibres;

3 a cross-linked polyethylene heat-shrinkable tube, which encloses the adhesive insert tube and the reinforcement member.

Figure 1 — Heat shrinkable splice protector

4.1.3 Crimp, fold-over or clam shell splice protector type

The fused area of the optical fibre is centred and kept in place by adhesive strips and then the splice protector is folded over and closed by the use of a crimping tool. In general the following elements are present:

— a rigid flat strip hinged in the centre;

— a compressible material adhered to the flat strip.

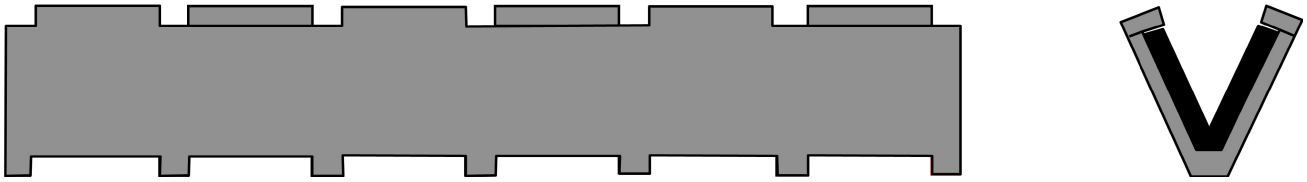


Figure 2 — Crimp, fold-over or clam shell splice protector

4.2 Materials

Materials which are not specified or which are not specifically described are left to the discretion of the manufacturer. However, the following requirements shall be met:

— all materials that are likely to come in contact with personnel shall meet appropriate health and safety regulations;

— the sealing materials shall be compatible with the fibre materials and/or the mechanical splice parts;

— the sealant or encapsulant material shall be free of dirt and air inclusions;