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**Konektorski sestavi in povezovalne komponente za optične komunikacijske sisteme - Specifikacija izdelka - 16-1. del: Simpleks LF3 APC, zaključen na enorodnem optičnem kablu po IEC 60793-2-50 kategorij B1.1 in B1.3 s tulko iz titanovega kompozita za kategorijo C**

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 16-1: Type LF3 APC simplex terminated on IEC 60793-2-50 category B1.1 and B1.3 single mode fibre with titanium composite ferrule for Category C

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Steckverbindersätze und Verbindungsbaulemente für Lichtwellenleiter - Datenübertragungssysteme - Produktformen - Teil 16-1: Bauart LF3-APC-Simplex zum Anschluss an Einmodenfasern der Typen B1.1 und B1.3 nach IEC 60793-2-50 mit Titanium-Komposit-Ferrule für die Kategorie C

Jeux de connecteurs et composants d'interconnexion à utiliser dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 16-1: Type LF3 APC simplex raccordé sur des fibres unimodales de catégorie B1.1 et B1.3 de la CEI 60793-2-50, avec férule en composite de titane, pour utilisation en catégorie C

**Ta slovenski standard je istoveten z: EN 50377-16-1:2011**

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**ICS:**

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

**EN 50377-16-1**

December 2011

ICS 33.180.20

English version

**Connector sets and interconnect components to be used in optical fibre communication systems -  
Product specifications -  
Part 16-1: Type LF3 APC simplex terminated on IEC 60793-2-50 category B1.1 and B1.3 singlemode fibre with titanium composite ferrule for category C**

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Teil 16-1: Bauart LF3-APC-Simplex zum Anschluss an Einmodenfasern der Typen B1.1 und B1.3 nach IEC 60793-2-50 mit Titanium-Komposit-Ferrule für die Kategorie C

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**EN 50377-16-1:2011 (E)****Foreword**

This document (EN 50377-16-1:2011) has been prepared by CLC/TC 86BXA "Fibre optic interconnect, passive and connectorised components".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-10-31
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2014-10-31

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications			
Part 16-1: Type LF3 APC simplex terminated on IEC 60793-2-50 category B1.1 and B1.3 single mode fibre with titanium composite ferrule for Category C			
Description		Performance	
Coupling mechanism:	latched push-pull	Application:	For use in Category C (controlled environment)
Configuration:	plug/adaptor/plug	Attenuation grades: (random mate)	B: $\leq 0,12$ dB mean $\leq 0,25$ dB for > 97 % of measurements
Fibre category	EN 60793-2-50 type B1.1 and B1.3		C: $\leq 0,25$ dB mean $\leq 0,50$ dB for > 97 % of measurements
Cable type:	see Table 3	Return loss grade:	1: $\geq 60$ dB (mated) $\geq 55$ dB (unmated)
Related documents:			
EN 60794-2	Optical fibre cables - Part 2: Indoor cables - Sectional specification (IEC 60794-2)		
EN 61300 (series)	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures (IEC 61300 series)		
EN 61753-1	Fibre optic interconnecting devices and passive components performance standard - Part 1: General and guidance for performance standards (IEC 61753-1)		
EN 61754-28 <sup>1</sup>	Fibre optic connector interfaces - Part 28: Type LF3 connector family (IEC 61754-28)		
EN 61755-1	Fibre optic connector optical interfaces - Part 1: Optical interfaces for single mode non-dispersion shifted fibres - General and guidance (IEC 61755-1)		
EN 61755-3-8	Fibre optic connector optical interfaces - Part 3-8: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical 8 degrees angled-APC composite ferrule using Titanium as fibre surrounding material, single mode fibre (IEC 61755-3-8)		
Outline and maximum dimensions (mm):			

<sup>1</sup> At draft stage (CDV).

**EN 50377-16-1:2011 (E)****1 Scope****1.1 Product definition**

This European Standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a terminated and assembled singlemode resilient alignment sleeve LF3 APC 8° simplex connector set (plug-adaptor-plug), adaptor and patchcord will meet in order for it to be categorised as an EN standard product.

Since different variants and grades of performance are permitted, product marking details are given in 3.5.

**1.2 Intermateability**

Although all products conforming to the requirements of this European Standard will intermate, the resulting level of random attenuation performance will only be ensured in accordance with Table 1. The intention is that this will be true irrespective of the manufacturing source(s) of the product.

When intermating plug variants having different attenuation grades, the resulting level of attenuation cannot be assured to be any better than the worst attenuation grade.

The intermating of a grade C plug with a grade B plug will result in an uncertain level of random attenuation performance.

**Table 1 - Ensured level of random attenuation**

Plug variant/Attenuation grade	C	B
C	C	C
B	C	B

**1.3 Operating environment**

The tests selected combined with the severities and durations are representative of a Category C environment as defined in EN 61753-1.

**1.4 Reliability**

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

**1.5 Quality assurance**

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

**2 Normative references**

The following referenced documents are indispensable for the application 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 60793-2-50, *Optical fibres — Part 2-50: Product specifications — Sectional specification for class B single-mode fibres (IEC 60793-2-50)*



- EN 60794-2-50, *Optical fibre cables — Part 2-50: Indoor cables — Family specification for simplex and duplex cables for use in terminated cable assemblies (IEC 60794-2-50)*
- 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 61300-2-2, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-2: Tests — Mating durability (IEC 61300-2-2)*
- 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 61300-2-6, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-6: Tests — Tensile strength of coupling mechanism (IEC 61300-2-6)*
- EN 61300-2-12, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-12: Tests — Impact (IEC 61300-2-12)*
- 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 61300-2-19, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-19: Tests — Damp heat (steady state) (IEC 61300-2-19)*
- 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 61300-2-42, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-42: Tests — Static side load for connectors (IEC 61300-2-42)*
- EN 61300-2-44, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-44: Tests — Flexing of the strain relief of fibre optic devices (IEC 61300-2-44)*
- EN 61300-3-4, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-4: Examinations and measurements — Attenuation (IEC 61300-3-4)*
- EN 61300-3-6, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-6: Examinations and measurements — Return loss (IEC 61300-3-6)*
- EN 61300-3-10, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-10: Examinations and measurements — Gauge retention force (IEC 61300-3-10)*
- EN 61300-3-15, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-15: Examinations and measurements — Dome eccentricity of a convex polished ferrule endface (IEC 61300-3-15)*
- EN 61300-3-16, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-16: Examinations and measurements — Endface radius of spherically polished ferrules (IEC 61300-3-16)*
- EN 61300-3-23, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-23: Examination and measurements — Fibre position relative to ferrule endface (IEC 61300-3-23)*
- 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)*

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EN 61300-3-34, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-34: Examinations and measurements — Attenuation of random mated connectors (IEC 61300-3-34)*

EN 61300-3-42:2008, *Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-42: Examinations and measurements — Attenuation of single mode alignment sleeves and or adaptors with resilient alignment sleeves (IEC 61300-3-42:2007)*

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

EN 61755-1, *Fibre optic connector optical interfaces — Part 1: Optical interfaces for single mode non-dispersion shifted fibres — General and guidance (IEC 61755-1)*

EN 61755-2-2, *Fibre optic connector optical interfaces — Part 2-2: Optical interface standard single mode angled physically contacting fibres (IEC 61755-2-2)*

EN 61755-3-8, *Fibre optic interconnecting devices and passive components — Fibre optic connector optical interfaces — Part 3-8: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical 8 degrees angled-APC composite ferrule using titanium as fibre surrounding material, single mode fibre (IEC 61755-3-8)*

**3 Description****3.1 General**

The LF3 APC connector is a single position plug connector set of plug adaptor plug configuration characterised by a cylindrical, spring loaded butting ferrule of 1,25 mm nominal diameter and a latched push-pull coupling mechanism. The optical alignment mechanism of the connectors is of a resilient sleeve style.

**3.2 Plug**

The plug features a cylindrical composite ferrule using titanium as fibre surrounding material and a push-pull mechanism. It has a single male key which is used to limit and may be used to orientate, the relative rotation between mated connectors.

**3.3 Adaptor**

The adaptor has a zirconia ceramic resilient alignment sleeve. The mounting styles are simplex rectangular flange equipped with snap-latches or screws, and duplex rectangular flange with snap-latches or screws.

Covers (dust caps) shall be provided to protect each port of the adaptor.

**3.4 Materials**

Materials which are not specified or which are not specifically described are left to the discretion of the manufacturer.

**3.5 Dimensions**

Outline dimensions and other dimensions necessary to ensure intermateability or which affect performance are specified. All other dimensions are left to the discretion of the manufacturer. Where the mating face limit dimensions are not in agreement with an EN Interface Standard this is clearly stated.

### 3.6 Colour and marking

Marking of the product shall be in the following order of precedence:

- identification of manufacturer;
- manufacturing date code: year/week;
- manufacturers part number;

variant identification number.

The following colour scheme is preferred:

**Table 2 - Preferred colour scheme**

Adaptor	Delatch housing
Green	Green
Preferred RAL number 6018.	

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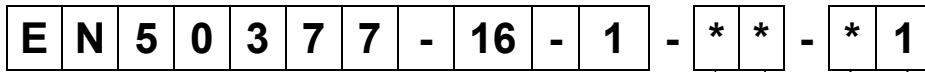
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## 4 Variants

## 4.1 Terminated plug

The following variants are permitted:

Table 3 - Plug variants



No.	Fibre/Cable Ømm	Structure
01	0,6 - 1,4	Buffered fibre
02	1,6 ± 0,2	Reinforced cable
03	2,0 ± 0,2	Reinforced cable
04	2,4 ± 0,2	Reinforced cable
05	2,8 ± 0,2	Reinforced cable
06	3,0 ± 0,2	Reinforced cable

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Code	Attenuation grade
B	B
C	C

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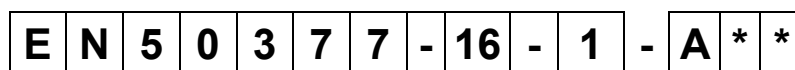
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Code	Return loss grade
1	1

## 4.2 Adaptor

The following variants are permitted:

Table 4 - Adaptor variants



No.	Format
A01	Simplex – clip fixing
A02	Duplex – clip fixing
A03	Simplex – screw fixing
A04	Duplex – screw fixing