

Fibre organisers and closures to be used in optical fibre communication systems - Product specifications - Part 3-1: Fibre management system, splice wall box, for category C & G

EESTI STANDARDI EESSÕNA

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EUROPEAN STANDARD

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English version

**Fibre organisers and closures to be used in optical fibre communication systems -
Product specifications -
Part 3-1: Fibre management system, splice wall box, for category C & G**

Organiseurs et boîtiers de fibres destinés
à être utilisés dans les systèmes de
communication par fibres optiques -
Spécifications de produits -
Partie 3-1: Système de gestion de fibres,
boîtier mural d'épissures, pour les
catégories C & G

LWL-Spleißkassetten und -Muffen für die
Anwendung in LWL-
Kommunikationssystemen -
Produktnormen -
Teil 3-1: Faser Management System,
Wandspleißverteiler für die Kategorien C
und G

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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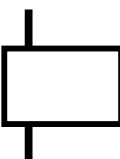
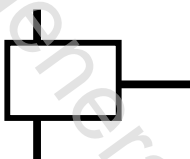
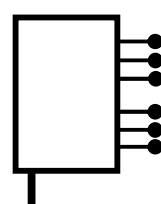
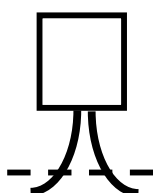
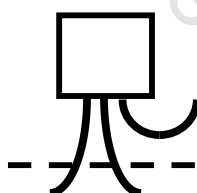
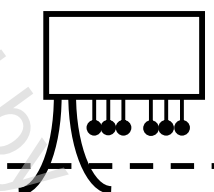
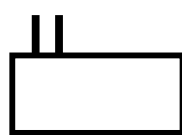
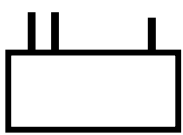
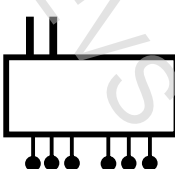
Foreword

This document (EN 50411-3-1:2012) 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 (dop) 2013-05-28
implemented at national level by publication of
an identical national standard or by
endorsement
- latest date by which the national standards (dow) 2015-05-28
conflicting with this document have to
be withdrawn

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Fibre organisers and closures to be used in optical fibre communication systems – Product specifications					
Part 3-1: Fibre management system, splice wall box, for category C & G					
Description			Typical installation application		
Construction:	Wall mounted box		Track box (2 cables minimum)		
			Spur box (3 cables minimum)		
			Distribution box (6 cables minimum).		
Performance					
Applications:	Optical fibre cable networks		IEC 61753-1:2007, category C		
	For indoor; for external above ground;		IEC 61753-1:2007, category G		
Fibre separation level - FMS splice trays:					
Single circuit (>2 fibres per tray), Single element (>12 fibres per tray), Multiple element (>144 fibres per tray)			Single ribbon (>4 fibres per tray), Multiple ribbon (>144 fibres per tray)		
For reference on how fibre separation levels fits into the modularity of FMS organisers, see also FMS organiser options in Annexes C to E					
Construction and splice tray capacity:					
FMS –Number splice trays (maximum) – for each fibre separation level – SC, SE, SR, ME and MR					
Number of trays needed for:	S organiser			M organiser	
	Single circuit SC (4f)	Single element SE (12f)	Single ribbon SR (4f)	Multiple element ME (144f)	Multiple ribbon MR (144)
Typical capacity 12 fibres	6	1	3	1	1
Typical capacity 144 fibres	36	12	36	1	1(12 f/R)
Box type - minimum no of cable entries:	Track box - 2		Spur box - 3		Distribution box - 6
Schematic diagrams (Cable entries can be in any orientation)					
Typical installations A Street cabinet or external configurations					
Typical installations B Office internal configurations					

1 Scope

1.1 Product definition

This European Standard covers wall boxes for up to 288 fibre splices. Wall boxes for connectors will be covered in a future part of the EN 50411-3 series.

This European Standard covers two environmental service requirements, for use inside a building under category C and externally of buildings under category G both to EN 61753-1:2007.

This European Standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements of a fully installed optical fibre wall box, in order for it to be categorised as an EN standard product.

The wall box must be suitable for fixing to a vertical internal or external surface above ground level.

The wall box is a housing containing a fibre management system, containing splice trays of various fibre separation levels, and may contain one or more of the following:

- storage and/or routing of cable;
- through-box/uncut fibre, cable storage;
- passive devices.

This document specifies the number of splice trays for each fibre separation level.

1.2 Operating environment

The tests selected combined with the severity and duration is representative of indoor and outside plant for above ground environments defined by:

- EN 61753-1:
- category C: Controlled environment
 - category G: Ground level environment

1.3 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.

1.4 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.

1.5 Allowed fibre and cable types

All types of fibre are permitted for a FMS with a minimum bend radius of 30 mm. A minimum bend of 20 mm can only be used with a B 6 fibre. The box, once tested according to this product specification, will be also suited for other fibre types, for example bend insensitive, dispersion shifted, non-zero dispersion shifted and multimode fibres.

This wall box standard allows both single-mode and multi-mode fibre to be used and covers all IEC standard optical fibre cables with their various fibre capacities, types and designs as long as fitting in the box does not contravene the minimum bend radius.

The minimum bend radius of fibre depends on its type, and is applicable for all operational wavelengths:

- EN 60793-2-10, Type A1 multimode fibre is 30 mm;
- EN 60793-2-50, Type B 1.1 and B 1.3 singlemode fibre is 30 mm; (20 mm is accepted for total lengths less than 2 m)
- EN 60793-2-50, Type B6-a1, B6-a2 singlemode fibre (ITU-T G.657) is 20 mm (15 mm is accepted for total lengths less than 0,5 m)

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- | | |
|--------------------|---|
| EN 50411-2 | <i>Fibre organisers and closures to be used in optical fibre communication systems — Product specifications — Part 2: General and guidance for optical fibre cable joint closures, protected microduct closures, and microduct connectors</i> |
| EN 60529 | <i>Degrees of protection provided by enclosures (IP Code)(IEC 60529)</i> |
| EN 60695-11-10 | <i>Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods (IEC 60695-11-10)</i> |
| EN 60793-2-50:2008 | <i>Optical fibres — Part 2-50: Product specifications — Sectional specification for class B single-mode fibres (IEC 60793-2-50:2008)</i> |
| EN 60793-2-10 | <i>Optical fibres — Part 2-10: Product specifications — Sectional specification for category A1 multimode fibres (IEC 60793-2-10)</i> |
| EN 60794-2 | <i>Optical fibre cables — Part 2: Indoor cables — Sectional specification (IEC 60794-2)</i> |
| EN 60794-3 | <i>Optical fibre cables — Part 3: Sectional specification — Outdoor cables (IEC 60794-3)</i> |
| EN 61034-1 | <i>Measurement of smoke density of cables burning under defined conditions — Part 1: Test apparatus (IEC 61034-1)</i> |
| EN 61300-2-1 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-1: Tests — Vibration (sinusoidal) (IEC 61300-2-1)</i> |
| EN 61300-2-4 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-4: Tests — Fibre/cable retention (IEC 61300-2-4)</i> |
| EN 61300-2-9 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-9: Tests — Shock (IEC 61300-2-9)</i> |
| EN 61300-2-12:2009 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-12: Tests — Impact (IEC 61300-2-12:2009)</i> |
| EN 61300-2-22 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-22: Tests — Change of temperature (IEC 61300-2-22)</i> |
| EN 61300-2-26 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-26: Tests — Salt mist (IEC 61300-2-26)</i> |
| EN 61300-2-33 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-33: Tests — Assembly and disassembly of fibre optic closures (IEC 61300-2-33)</i> |
| EN 61300-2-34 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 2-34: Tests — Resistance to solvents and contaminating fluids of interconnecting components and closures (IEC 61300-2-34)</i> |
| EN 61300-3-1 | <i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-1: Examinations and measurements — Visual examination (IEC 61300-3-1)</i> |

EN 61300-3-3:2009	<i>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 61300-3-3:2009)</i>
EN 61300-3-28	<i>Fibre optic interconnecting devices and passive components — Basic test and measurement procedures — Part 3-28: Examinations and measurements — Transient loss (IEC 61300-3-28)</i>
EN 61753-1:2007	<i>Fibre optic interconnecting devices and passive components performance standard — Part 1: General and guidance for performance standard (IEC 61753-1:2007)</i>
EN 61756-1	<i>Fibre optic interconnecting devices and passive components — Interface Standard for fibre management systems — Part 1: General and guidance (IEC 61756-1)</i>
EN 61758-1	<i>Fibre optic interconnecting devices and passive components — Interface standard for closures — Part 1: General and Guidance (IEC 61758-1)</i>
IEC 60754-2	<i>Test on gases evolved during combustion of materials from cables — Part 2: Determination of acidity (by pH measurement) and conductivity</i>

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1

fibre splicing management system

assembly of fibre splicing cassettes built in such a way that the routing of fibres and the storage of the fibres and fibre splices is done in a controlled way. Controlled means in this case that the mechanical stress is controlled by ensuring a minimum bending radius of the fibres.

3.1.2

single circuit fibre management system

fibre system separation level, that is down to the individual customer level achieving the minimum of customer circuit disturbance

3.1.3

cable element

grouping of fibres under the cable sheath

3.2 Abbreviations

PS	Product Specification
OD	Outside Diameter
ID	Inside Diameter
FMS	Fibre Management System

4 Description

4.1 Optical fibre wall box housing

An optical fibre wall box comprises a housing that is attached to wall and the ends of the joined cable sheath. The wall box has a means of containing and protecting the fibres, splices, and other passive optical devices.

Wall boxes used for blowing cable or fibre comprises an access housing that allows the interconnection of cable microducts or tubes where the ends of the microducts or cables containing empty tubes are contained. The wall box also contains an FSM.