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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Interface standard for closures – Part 1: General and guidance

Dispositifs d'interconnexion et composants passifs à fibres optiques – Norme d'interface pour boitiers – Partie 1: Généralités et lignes directrices

IEC 61758-1:2008

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – INTERFACE STANDARD FOR CLOSURES –

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FOREWORD

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International Standard IEC 61758-1 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This bilingual version (2012-09) corresponds to the monolingual English version, published in 2008-04.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/2683/FDIS	86B/2712/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61758 series, published under the general title *Fibre optic interconnecting devices and passive components – Interface standard for closures,* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – INTERFACE STANDARD FOR CLOSURES –

Part 1: General and guidance

1 Scope

This part of IEC 61758 provides general information and guidance on the subject of closures. It includes references, general closure and interface descriptions and definitions.

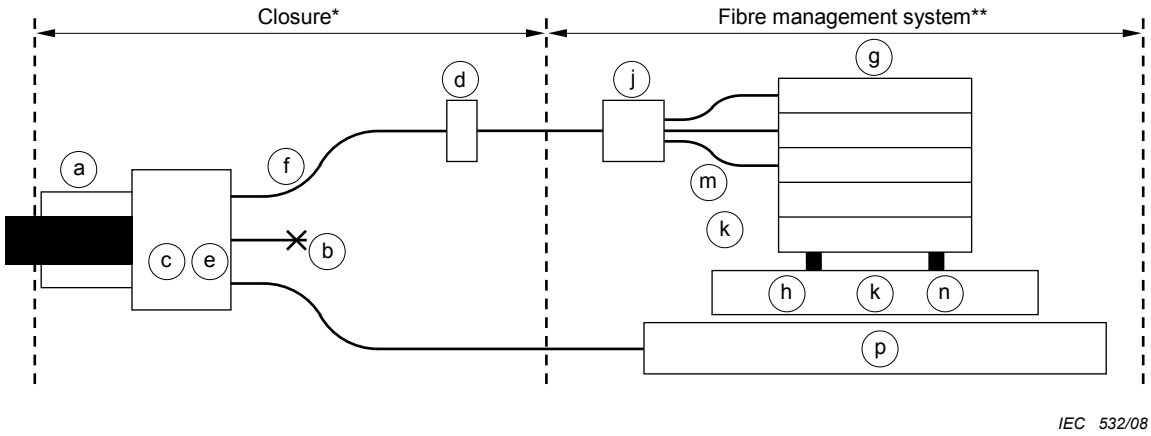
This standard defines the following general interfaces for closures:

- interface to cables;
- interface to FMS;
- interface to parts other than FMS or cables;
- interface to external sitings (pits, manholes etc.)

This specification covers all types of closures. The performance requirements are given in IEC 61753-111 series (in preparation).

This closure standard allows both single mode and multi-mode fibre to be used, and covers all IEC standard optical fibre cables as listed in Clause 2, with their various fibre capacities, types and designs.

Figure 1 shows and defines the interface between the closure and the fibre management system.



Key

Closure functions*

(a) Cable sealing

(b) Cable anchorage

(c) Cable blockage

(d) Cable gas blocking

(e) Distribution element

(f) Identification

FMS functions**

(g) Organiser/splice tray(s)

(h) Fibre storage

(j) Distribution element

(k) Passive components

(m) Guiding elements

(n) Connectors

(p) Cable element storage

* Example of Closure

** Example of FMS

Figure 1 – Closure and FMS functions

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.

IEC 60068-3-3, *Environmental testing – Part 3: Guidance – Seismic test methods for equipment*

IEC 60721-2-6, *Classification of environmental conditions – Part 2: Environmental conditions appearing in nature – Earthquake vibration and shock*

IEC 60793-2 (all parts), *Optical fibres – Part 2: Product specifications*

IEC 60794-2 (all parts), *Optical fibre cables – Part 2: Indoor cables*

IEC 60794-3 (all parts), *Optical fibre cables – Part 3: Outdoor cables*

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCS)*

IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*

IEC 61753 (all parts), *Fibre optic interconnecting devices and passive components performance standard*

IEC 61753-1, *Fibre optic interconnecting devices and passive components performance standard – Part 1 – General and guidance for performance standards*

IEC 61756-1, *Fibre optic interconnecting devices and passive components – Interface standard for fibre management systems – Part 1: General and guidance*

IEC/TR 62222, *Fire performance of communication cables installed in buildings*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

3.1.1
ancillary components
components that are used for functions other than optical transmission

3.1.2
closure
all external housings except outdoor cabinets

3.1.3
enclosure
indoor housings (cabinets, cases, distribution frames) and outdoor cabinets

3.1.4
housing
closure or enclosure

3.1.5
intervention
opening the cover, modifying, adding, removing or repairing fibre circuits, splices, connectors or other components between the incoming and outgoing cables of an existing fibre management system

3.1.6
optical node
a point of intervention in the network, e.g. at each opening of a cable jacket or at the end of the cable

NOTE Nodes in this specification are parts of the physical network containing closures and fibre management systems capable of performing their expected function in the network, while exposed to the environment that they are intended to reside in.

3.1.7
fibre management system
system to control, protect and store fibres from the incoming to the outgoing fibres

[IEC 61756-1, definition 3.1.4]

3.1.8
active optical component
optical component or assembly which makes use of quantum-mechanical effects or generates optical gain of signal power, or directly modulates optical signals

NOTE 1 Examples include optical amplifiers.

NOTE 2 Sometimes optical sources and optical detectors have been designed as active optical components.

[IEC 61756-1, definition 3.1.14].

3.1.9
passive optical component
an optical component or assembly which does not require any source of energy for its operation other than optical input signals, or controls the dynamic or static characteristics of optical signals using a source of energy; an optical passive component never generates an optical gain of signal power

NOTE 1 Examples include optical attenuators and passive branching devices.

NOTE 2 Photo diode, which is an active component used as simple signal monitoring, might be treated as a passive optical component.

[IEC 61756-1, definition 3.1.15]

3.1.10
external siting
mounting location for closures

3.2 Abbreviations

FMS: fibre management system

xWDM: wavelength division multiplexing device (DWDM, CWDM, etc.)

4 General description

4.1 Functional requirements

The general function of the closure is to provide:

- a housing for a fibre management system, including cable element storage, and ancillary passive or active components or other functional parts to build an optical node;
- a management system for the external environment, e.g. subterranean chambers, aerial poles and street cabinets;
- environmental and mechanical protection.

The following ancillary passive and active optical components may be stored or installed in the closure, but outside of the fibre management system or other functional parts of the optical node:

- electronic sensors and ancillary equipment for the detection of moisture ingress;
- communication electronic alarm devices and cable equipment for the transmission of signals to an external remote control station;
- grounding to earth of metallic parts of the structure and cables for operator safety.

4.2 Environmental requirements

The primary environmental requirements are:

- environmental protection;
- mechanical protection.

Environmental and mechanical protection prevents damage to the closure and protect internal closure components and assemblies from external environmental influences, including

temperature, humidity, vibration, impact, compression, torsion, bump, tension and aggressive and corrosive media.

Environmental performance tests are carried out to suit the installed environment. Each has an appropriate severity category listed in IEC 61300 and IEC 61753-1:

- S: subterranean (underground);
- A: aerial;
- G: ground level;
- C: controlled (in building).

4.3 Functional closure parts

4.3.1 Primary function

The primary function of the closure is to protect the fibre and other functional parts and to provide quick access to all internal components and assemblies.

The primary functional parts of the closure are:

- covers;
- base or end plates;
- closing parts;
- seals for the base or end plates.

4.3.2 Cover functional requirements

The closure cover requires the following features:

- sealing feature;
- means of attachment .

4.3.3 Base or end plate functional requirements

The primary function of the base or end plate is cable attachment and sealing.

The closure base or end plate requires the following features:

- sealing feature;
- means of attachment;
- cable entry ports.

4.3.4 Opening and closing functional requirements

The opening and closing function provides access to internal members, adequate closing force and structural strength.

The closure cover to base fixing requires the following features:

- secure fixing;
- sealing feature.

4.3.5 Closure seal functional requirements

The function of these parts of the closure is to form a gas and liquid resistant seal.

4.3.6 General functional requirements

In addition to the above the following functions shall be provided, where required, in each closure:

- ability to attach other structural parts;
- ability to fit an air pressure valve.

5 Closure overpressure safety

Overpressure can build up in sealed closures due to temperature differentials over a period of time, or due to tightness testing of the seals after installation or incorrect installation techniques.

Care should be taken when opening a sealed closure.

Provisions shall be made that overpressure is exhausted when opening the closure prior to complete removal of the cover.

For all sealed closures used for air blown fibre cable applications, a preset overpressure release system is required.

6 Grounding interface

When required by local regulations, metallic parts of the closure shall have a provision for electrical grounding, primarily for safety. Additional parts can be used to provide an external grounding.

7 General closure interfaces

This standard defines interfaces of:

- cable to closure interface;
- FMS to closure interface;
- other parts to closure interface;
- closure to external interface.

8 Cable to closure interface

8.1 General

Functional requirements of the cable to closure interface shall maintain the mechanical, electrical and environmental characteristics of the cable when cable sheath is removed. These interface specifications consider fibre types according to the IEC 60793-2 series and cable types in compliance with the IEC 60794-2 and IEC 60794-3 series.

8.2 Functional requirements

8.2.1 General

The interface requirements depend on the cable construction and environmental category.

The main function of the closure is to ensure the gas and water tightness of the fibre connections of two or more connected fibre optic cables. Furthermore the closure shall ensure