



BSI Standards Publication

# Fibre optic connector optical interfaces —

Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrules for 8 degrees angled-PC single mode fibres

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### National foreword

This British Standard is the UK implementation of EN 61755-3-2:2009. It was derived by CENELEC from IEC 61755-3-2:2006, incorporating corrigendum January 2009.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by tags (e.g. [C] [C]).

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by IEC corrigendum January 2009 is indicated in the text by [AC1] [AC1].

The UK participation in its preparation was entrusted by Technical Committee GEL/86, Fibre optics, to Subcommittee GEL/86/2, Fibre optic interconnecting devices and passive components.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**Fibre optic connector optical interfaces -  
Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter  
cylindrical full zirconia ferrules  
for 8 degrees angled-PC single mode fibres  
(IEC 61755-3-2:2006, modified + corrigendum 2009)**

Interfaces optiques de connecteurs  
pour fibres optiques -  
Partie 3-2: Interfaces optiques,  
ferrules PC en zircone plein cylindrique  
de diamètre 2,5 mm et 1,25 mm,  
pour fibres unimodales  
à angle PC de 8 degrés  
(CEI 61755-3-2:2006, modifiée +  
corrigendum 2009)

Optische Schnittstellen  
für Lichtwellenleiter-Steckverbinder -  
Teil 3-2: Optische Schnittstellen  
mit 8° abgeschrägten Zirkonium-Ferrulen  
mit 2,5 mm und 1,25 mm Durchmesser  
für Einmodenfasern mit  
physikalischem Kontakt  
(IEC 61755-3-2:2006, modifiziert +  
Corrigendum 2009)

This European Standard was approved by CENELEC on 2008-12-01. 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.

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**CENELEC**

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

**Central Secretariat: avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of the International Standard IEC 61755-3-2:2006, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, together with the common modifications prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic interconnect, passive and connectorised components, was submitted to the formal vote and was approved by CENELEC as EN 61755-3-2 on 2008-12-01.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2009-12-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2011-12-01

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## Endorsement notice

The text of the International Standard IEC 61755-3-2:2006 + corrigendum January 2009 was approved by CENELEC as a European Standard with agreed common modifications.

## FIBRE OPTIC CONNECTOR OPTICAL INTERFACES –

### Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrules for 8 degrees angled-PC single mode fibres

#### 1 Scope

This part of IEC 61755 defines certain dimensional limits of a 2,5 mm and a 1,25mm diameter cylindrical zirconia ( $\text{ZrO}_2$ ) 8 degrees angled-PC (APC) ferrule optical interface to meet specific requirements for connecting fibre to fibre interconnection. Ferrules made from the material specified in this document are suitable for use in categories C, U, E and O as defined in IEC 61753-1.

#### 2 Description

The performance of an angled-PC polished cylindrical ferrule optical interface is determined by the accuracy with which the optical datum targets of two mating ferrules are aligned with each other. There are three conditions affecting the alignment of two optical datum targets: lateral offset, angular offset and longitudinal offset.

Parameters influencing the lateral and angular offset of the optical fibre axes include the following:

- ferrule outside diameter;
- fibre hole concentricity relative to the ferrule outside diameter;
- fibre hole angle relative to outside diameter axis;
- fibre cladding diameter relative to fibre hole clearance;
- alignment sleeve inside diameter;
- fibre core concentricity relative to the cladding diameter;
- fibre core orientation relative to keying;
- ferrule grasping force of the alignment sleeve;
- the amount of angled PC polishing after tuning of the connector at PC condition.

Parameters influencing the axial alignment of the optical fibre axes include the following:

- end-face spherical radius;
- end-face spherical radius apex offset of ferrule or angle relative to angle-PC reference plane;
- fibre undercut;
- ferrule rotational clearance relative to the keying;
- axial force on ferrule end-face;
- ferrule and fibre material physical constants;
- alignment sleeve frictional force;
- keying accuracy.