

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 4-3: Type SC/APC simplex 9° terminated on EN 60793-2-50 of type B-652.D and B-657.A singlemode fibre with full zirconia ferrule, category OP

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50377-4-3:2022 sisaldab Euroopa standardi EN 50377-4-3:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 50377-4-3:2022 consists of the English text of the European standard EN 50377-4-3:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.07.2022.	Date of Availability of the European standard is 08.07.2022.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.180.20

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Connector sets and interconnect components to be used in
optical fibre communication systems - Product specifications -
Part 4-3: Type SC/APC simplex 9° terminated on EN 60793-2-50
of type B-652.D and B-657.A singlemode fibre with full zirconia
ferrule, category OP

Jeux de connecteurs et composants d'interconnexion à
utiliser dans les systèmes de communication par fibres
optiques - Spécifications de produit - Partie 4-3: Type
SC/APC simplex 9° raccordé sur fibres unimodales de
types B-652.D et B-657.A de l'EN 60793-2-50 avec une
ferrule en zircone pleine, catégorie OP

Steckverbindersätze und Verbindungsbaulemente für
Lichtwellenleiter- Datenübertragungssysteme -
Produktnormen - Teil 4-3: Bauart SC-APC-Simplex, 9°, zum
Anschluss an Einmodenfasern der Typen B-652.D und B-
657.A nach EN 60793-2-50 mit Zirkoniumdioxid-Ferrule für
die Kategorie OP

This European Standard was approved by CENELEC on 2022-06-06. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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	4
Introduction	5
1 Scope	7
1.1 Product definition.....	7
1.2 Intermateability.....	7
1.3 Operating environment.....	7
1.4 Reliability.....	7
1.5 Quality assurance.....	7
2 Normative references	7
3 Terms and definitions	9
4 Description	9
4.1 General.....	9
4.2 Plug.....	9
4.3 Adaptor.....	9
4.4 Materials.....	9
4.5 Dimensions.....	9
4.6 Colour and marking.....	9
5 Variants	10
5.1 Terminated plug.....	10
5.2 Adaptor.....	10
6 Dimensional requirements	11
6.1 Outline dimensions.....	11
6.1.1 Plug.....	11
6.1.2 Adaptor.....	11
6.2 Mating face and other limit dimensions.....	13
6.2.1 Plug.....	13
6.2.2 Adaptor.....	15
6.2.3 Ferrule end face geometry after termination.....	17
6.2.4 Pin gauge for adaptor.....	20
7 Tests	20
7.1 Sample size.....	20
7.2 Test and measurement methods.....	20
7.3 Test sequence.....	21
7.4 Pass/fail criteria.....	21
8 Test report	21
9 Product qualification requirements	21
9.1 Dimensional and marking requirements.....	21
9.2 Optical Requirements.....	21
9.3 Mechanical performance requirements.....	23
9.4 Environmental performance requirements.....	27
Annex A (informative) Attenuation against reference	30
A.1 Test details	30

A.2 Reference connector details	30
Annex B (normative) Adaptor matched reference plug details	31
Annex C (normative) Sample size and product sourcing requirements	32
Annex D (informative) Zirconia ferrule response surface	33
D.1 Maximum allowed spherical fibre undercut	33
Annex E (informative) Estimation of average fibre core eccentricity limits as a function of batch size	34
Bibliography	36

European foreword

This document (EN 50377-4-3:2022) 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) 2023-06-06
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2025-06-06

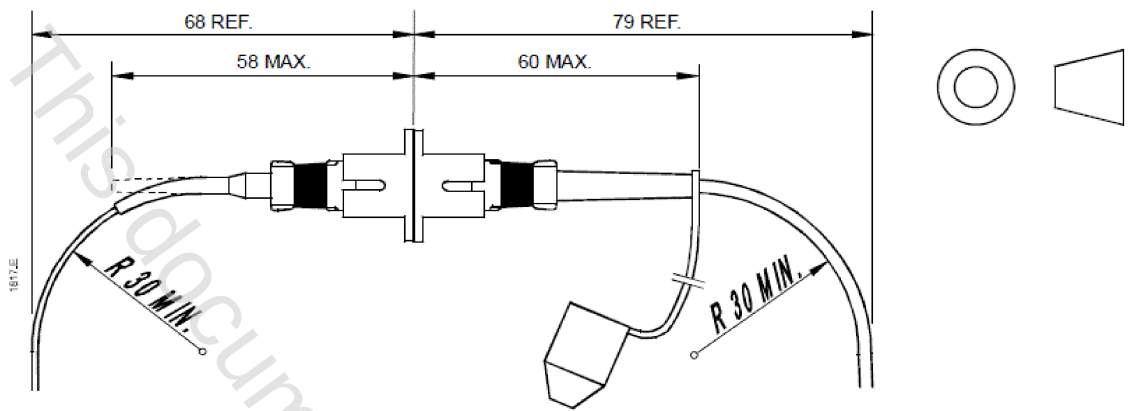
Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

Connector sets and interconnect components to be used in optical fibre communication systems — Product specifications			
Part 4-3: Type SC/APC simplex 9° terminated on EN 60793-2-50 of type B-652.D and B-657.A singlemode fibre with full zirconia ferrule, category OP			
Description		Performance	
Coupling mechanism:	Push-pull	Application:	For use in EN Category OP (outdoor protected environment)
Configuration:	Plug/adaptor/plug	Attenuation grade: (random mate)	B: $\leq 0,12$ dB mean $\leq 0,25$ dB for 97 % of measurements
Fibre category:	EN 60793-2-50 Types — B-652.D and B-657.A		
Cable type:	See Table 3	Return loss grade: (random mate)	1: ≥ 60 dB mated ≥ 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 IEC 61753-1:2018	Fibre optic interconnecting devices and passive components performance standard — Part 1: General and guidance (IEC 61753-1:2018)		
EN IEC 61754-4	Fibre optic interconnecting devices and passive components — Fibre optic connector interfaces — Part 4: Type SC connector family (IEC 61754-4)		
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)		
ETSI EN 300 019 series	Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment		
ETSI TS 100 671	Transmission and Multiplexing (TM); Passive optical components; Optical fibre connectors for single mode optical fibre communication systems; Common requirements and conformance testing		

Outline and maximum dimensions:



1 Scope

1.1 Product definition

This document contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a connector terminated with cylindrical zirconia 9° angled PC ferrule and assembled singlemode resilient alignment sleeve SC-APC simplex connector set (plug/adaptor/plug), adaptor and patchcord meet in order for it to be categorized as an EN standard product. This document is intended to replace CECC 86 265-803.

Since different variants are permitted, product marking details are given in 4.6.

1.2 Intermateability

Products conforming to the requirements of this document are intended to intermate, and it is expected that the specified level of random attenuation performance will be met. The intention is that this will be true irrespective of the manufacturing source(s) of the product.

1.3 Operating environment

The tests selected, combined with the severities and durations, are representative of a category OP environment described in EN IEC 61753-1.

1.4 Reliability

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

1.5 Quality assurance

Compliance with this document does not guarantee the manufacturing consistency of the product. This is expected to 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 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 IEC 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 61300-2-6, *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 61300-2-7, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-7: Tests - Bending moment* (IEC 61300-2-7)

EN 61300-2-12, *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 61300-2-22, *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 61300-2-27, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-27: Tests - Dust - Laminar flow (IEC 61300-2-27)*

EN 61300-2-42, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-42: Tests - Static side load for strain relief (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 IEC 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 61300-2-50, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-50: Tests - Fibre optic connector proof test with static load - Singlemode and multimode (IEC 61300-2-50)*

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 61300-3-34, *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, *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)*

EN 61300-3-47, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-47: Examinations and measurements - End face geometry of PC/APC spherically polished ferrules using interferometry (IEC 61300-3-47)*

ISO 8015, *Geometrical product specifications (GPS) - Fundamentals - Concepts, principles and rules*