SLOVENSKI STANDARD
SIST EN 50516-1-1:2012

01-januar-2012

Sestavi industrijskih konektorjev in povezovalnih komponent za uporabo v krmilnih in komunikacijskih sistemih z optičnimi kabli - Specifikacije izdelka - 1-1. del: Industrijski tip SC-RJ PC, zaključen z večrodnim optičnim vlaknom kategorij A1a in A1b po EN 60793-2-10, ki ustreza zahtevam kategorije I (industrijska okolja), kot je specificirana v IEC/PAS 61753-X-Y

Industrial connector sets and interconnect components to be used in optical fibre control and communication systems - Product specifications - Part 1-1: Type SC-RJ PC industrial terminated on EN 60793-2-10 category A1a and A1b multimode fibre to meet the requirements of category I (industrial environments) as specified in IEC/PAS 61753-X -Y

Industrie-Steckverbindersätze und Verbindungsbauelemente für Lichtwellenleiter-Steuerungs- und Datenübertragungssysteme - Produktnormen - Teil 1-1: Industriesteckverbinder der Bauart SC-RJ-PC zum Anschluss an Mehrmodenfasern der Typen A1a und A1b nach EN 60793-2-10 für die Kategorie I (Industrieumgebung) nach den Festlegungen in IEC 61753-1-3

Jeux de connecteurs industriels et composants d’interconnexion à utiliser dans les systèmes de communication et de commande par fibres optiques - Spécifications de produit - Partie 1 1: Type SC RJ PC industriel câblés sur fibre multimodale des catégories A1a et A1b de la norme EN 60793-2-10 pour satisfaire aux exigences de la catégorie I (environnements industriels) comme cela est spécifié dans la CEI 61753-1-3

Ta slovenski standard je istoveten z: **EN 50516-1-1:2011**

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices

SIST EN 50516-1-1:2012 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50516-1-1

November 2011

ICS 33.180.20

English version

Industrial connector sets and interconnect components to be used in optical fibre control and communication systems - Product specifications - Part 1-1: Type SC-RJ PC industrial terminated on EN 60793-2-10 category A1a and A1b multimode fibre to meet the requirements of category I (industrial environments) as specified in IEC 61753-1-3

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CENELEC

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

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic interconnect, passive and connectorised components.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50516-1-1 on 2011-07-19.

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)	2012-07-19
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-07-19

CENELEC draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning SC-RJ industrial connectors (see declaration in Annex F).

All potential patent issues concerning this product are covered by IEC patent statement (see EN 61754-24-21).

Introduction

CENELEC draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning Fiber Optic Connector Interface - SC-RJ Industrial given in Annex F.

CENELEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured CENELEC that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with CENELEC.

Information may be obtained from:

Reichle & De-Massari AG
Binzstrasse 31
CH - 8622 Wetzikon ZH
Switzerland

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

Industrial connector sets and interconnect components to be used in optical fibre control and communication systems – Product specifications

Part 1-1: Type SC-RJ PC industrial terminated on EN 60793-2-10 category A1a and A1b multimode fibre to meet the requirements of category I (industrial environments) as specified in IEC 61753-1-3

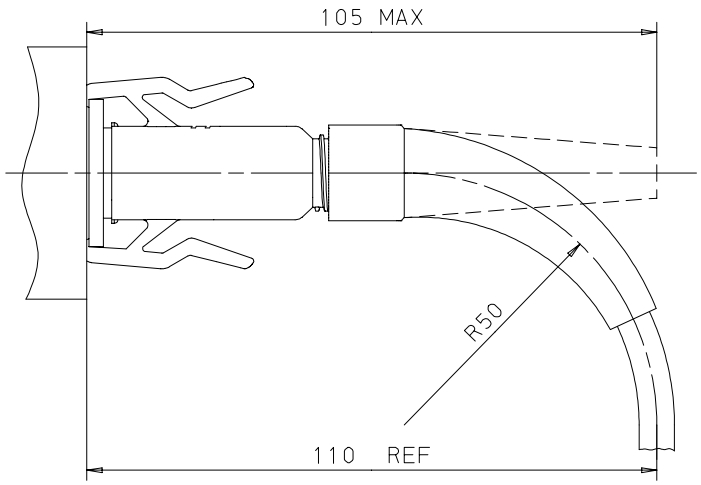
Description		**Performance**	
Coupling mechanism:	Latched with sealing	Application:	For the use in category I (industrial environment)
Configuration:	Plug / adaptor / plug with one side of the configuration having a protective shell	Attenuation (random mate):	Grade Bm Mean ≤ 0,35 dB and ≤ 0,60 dB for ≥ 97 % of measurements
Fibre category:	EN 60793-2-10 Types A1a and A1b		
Cable type:	See Table 3	Return loss:	Grade 2m ≥ 20 dB

Related documents:

EN 50173-1	Information technology – Generic cabling systems – Part 1: General requirements
EN 50173-3	Information technology – Generic cabling systems – Part 3: Industrial premises
EN 60529	Degrees of protection provided by enclosures (IP Code) (IEC 60529)
EN 60794-3	Optical fibre cables – Part 3: Sectional specification – Outdoor cables (IEC 60794-3)
EN 61076-3-106	Connectors for electronic equipment – Product requirements – Part 3-106: Rectangular connectors – Detail specification for protective housings for use with 8-way shielded and unshielded connectors for industrial environments incorporating the IEC 60603-7 series interface (IEC 61076-3-106)
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 61754-24	Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 24: Type SC-RJ connector family (IEC 61754-24)
IEC 61753-1-3 [1)]	Fibre optic interconnecting devices and passive components – Performance standard – Part 1-3: General and guidance for single-mode fibre optic connector performance for harsh industrial operating conditions

1) At draft stage.

Outline and maximum dimensions of plug with protective shell:



1 Scope

1.1 Product definition

This European Standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements that an SC-RJ connector set with one side protected by an industrial housing with the fibres terminated with cylindrical zirconia PC ferrules, an adaptor fitted with resilient alignment sleeves and patchcord shall meet in order for it to be categorised as an EN standard product. The product is rated IP67.

Since different variants are permitted, product marking details are given in 3.6.

1.2 Intermateability

Products conforming to the requirements of this specification will intermate and give the specified level of random attenuation and random return loss performance, provided that the same fibre type is used. 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, specified as category I, are intended to reflect, although they do not necessarily satisfy all the requirements of the boundary conditions of $M_3I_3C_3E_3$.

1.4 Reliability

Whilst the anticipated service life expectancy of the product in this environment is 20 years, compliance with this specification 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 specification 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 50377-6-1	Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 6-1: Type SC-RJ terminated on IEC 60793-2 category A1a and A1b multimode fibre
EN 50377-6-2	Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 6-2: SC-RJ single mode terminated on IEC 60793-2-50 category B1.1 and B1.3 singlemode fibre, category U
EN 60068-2-60	Environmental testing – Part 2: Tests – Test Ke: Flowing mixed gas corrosion test (IEC 60068-2-60)
EN 60529	Degrees of protection provided by enclosures (IP Code) (IEC 60529)
EN 60793-2-10	Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres (IEC 60793-2-10)
EN 60874-1	Connectors for optical fibres and cables – Part 1: Generic specification (IEC 60874-1)
EN 61300-1	Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance (IEC 61300-1)
EN 61300-2-1	Part 2-1: Tests – Vibration (sinusoidal) (IEC 61300-2-1)

EN 61300-2-2	Part 2-2: Tests – Mating durability (IEC 61300-2-2)
EN 61300-2-4	Part 2-4: Tests – Fibre/cable retention (IEC 61300-2-4)
EN 61300-2-5	Part 2-5: Tests – Torsion (IEC 61300-2-5)
EN 61300-2-6	Part 2-6: Tests – Tensile strength of coupling mechanism (IEC 61300-2-6)
EN 61300-2-7	Part 2-7: Tests – Bending moment (IEC 61300-2-7)
EN 61300-2-9	Part 2-9: Tests – Shock (IEC 61300-2-9)
EN 61300-2-10	Part 2-10: Tests – Crush resistance (IEC 61300-2-10)
EN 61300-2-12	Part 2-12: Tests – Impact (IEC 61300-2-12)
EN 61300-2-22	Part 2-22: Tests – Change of temperature (IEC 61300-2-22)
EN 61300-2-26	Part 2-26: Tests – Salt mist (IEC 61300-2-26)
EN 61300-2-27	Part 2-27: Tests – Dust – Laminar flow (IEC 61300-2-27)
EN 61300-2-34	Part 2-34: Tests – Resistance to solvents and contaminating fluids of interconnecting components and closures (IEC 61300-2-34)
EN 61300-2-35	Part 2-35: Tests – Cable nutation (IEC 61300-2-35)
EN 61300-2-46	Part 2-46: Tests – Damp heat cyclic (IEC 61300-2-46)
EN 61300-3-1	Part 3-1: Examinations and measurements – Visual examination (IEC 61300-3-1)
EN 61300-3-6	Part 3-6: Examinations and measurements – Return loss (IEC 61300-3-6)
EN 61300-3-15	Part 3-15: Examinations and measurements – Dome eccentricity of a convex polished ferrule endface (IEC 61300-3-15)
EN 61300-3-16	Part 3-16: Examinations and measurements – Endface radius of spherically polished ferrules (IEC 61300-3-16)
EN 61300-3-23	Part 3-23: Examination and measurements – Fibre position relative to ferrule endface (IEC 61300-3-23)
EN 61300-3-28	Part 3-28: Examinations and measurements – Transient loss (IEC 61300-3-28)
EN 61300-3-34	Part 3-34: Examinations and measurements – Attenuation of random mated connectors (IEC 61300-3-34)
EN 61300-3-35	Part 3-35: Examinations and measurements – Fibre optic connector endface visual and automated inspection (IEC 61300-3-35)
EN 61754-24-21	Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 24-21: Type SC-RJ connectors with protective housings based on IEC 61076-3-106, variant 06 (IEC 61754-24-21)
IEC 61753-1-3 [2)]	Fibre optic interconnecting devices and passive components – Performance standard – Part 1-3: General and guidance for single-mode fibre optic connector performance for harsh industrial operating conditions

2) At draft stage.

3 Description

3.1 General

The SC-RJ industrial connector is a duplex plug connector set of plug / adaptor / plug configuration with one side having a protective shell characterised with two cylindrical, spring loaded butting ferrules of 2,5 mm nominal diameter and a latched coupling mechanism. The optical alignment mechanism of the connectors is of a resilient sleeve style.

3.2 Plug

The plug consists of an SC-RJ connector interface and a housing part. These two parts have to be in the defined position to each other (see Figure 1 and Figure 3) to guarantee correct mating. The sealing is made between a gasket or o-ring (placed on the housing) and the adaptor frame fixed by two clamps. A cover (dust cap) to protect the ferrule endface when the plug is in the unmated condition shall be provided. The sealing shall also be guaranteed between the connector and the dust cap.

The plug features two cylindrical full zirconia ferrules and a push-pull coupling mechanisms. Alternative materials may be used for the ferrule that have directly compatible material properties as zirconia, but the endface and performance requirements shall be met under all conditions.

The plug has three male keys. Two of them are used to limit the relative rotation between mated SC simplex plugs and one gives the orientation to the duplex connector.

However, no primary pre-alignment is provided.

3.3 Adaptor

The adaptor consists of an SC-RJ adaptor as it is described in EN 50377-6-1 and EN 50377-6-2 and a mounting frame. These two parts have to be correctly positioned in relation to each other (see Figure 2 and Figure 3) to ensure sealing. The mounting frame itself shall be mounted onto an equipment (e.g. on a sealed box) with a gasket to guarantee the sealing between adaptor and whole used equipment. Preferred cut out dimensions to maintain sealing are given in Figure 3.

At the rear of the adaptor, there can be either an SC-RJ or two SC simplex connectors.

The adaptor consists of two zirconia ceramic resilient alignment sleeves and two push-pull coupling mechanisms, one for each sleeve. Alternative materials may be used for the sleeve that have directly compatible material properties as zirconia but the performance requirements shall be met under all conditions.

The adaptor housing has three female keys. Two of them are used to limit the relative rotation between mated SC simplex plugs and one gives the orientation to the duplex connector.

Covers (dust caps) shall be provided to protect each duplex 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 accordance with EN 60874-1, in the following order of precedence:

a) identification of manufacturer;

b) manufacturing date code: year / week;

c) manufacturers part number;

d) variant identification number.

The preferred colour scheme is given in Table 1.

Table 1 – Preferred colour scheme

De-latch housing SC-RJ plug	Adaptor
Beige / black	Beige / black
NOTE The preferred beige is RAL 1014 and black RAL 9005. Other not listed parts could also be of the preferred colour to show the colour scheme.	