BS EN 61300-2-42:2014

BSI Standards Publication

Fibre optic interconnecting devices and passive components — Basic test and measurement procedures

Part 2-42: Tests — Static side load for strain relief

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This British Standard is the UK implementation of EN 61300-2-42:2014. It is identical to IEC 61300-2-42:2014. It supersedes BS EN 61300-2-42:2005 which is withdrawn.

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 interconnecting devices and passive components - Basic test and measurement procedures - Part 2-42: Tests - Static side load for strain relief (IEC 61300-2-42:2014)

Dispositifs d'interconnexion et composants passifs à fibres optiques - Procédures fondamentales d'essais et de mesures - Partie 2-42: Essais - Charge latérale statique pour serre-câble (CEI 61300-2-42:2014)

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Messverfahren – Teil 2-42: Prüfungen - Statische Seitenlast für die Zugentlastung (IEC 61300-2-42:2014)

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Foreword

The text of document 86B/3699/FDIS, future edition 3 of IEC 61300-2-42, prepared by SC 86B "Fibre optic interconnecting devices and passive components" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61300-2-42:2014.

The following dates are fixed:

– latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-12-13
– latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-03-13

This document supersedes EN 61300-2-42:2005.

EN 61300-2-42:2014 includes the following significant technical changes with respect to EN 61300-2-42:2005:

– modification of the severity according to cable configurations.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61300-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures Part 1: General and guidance	EN 61300-1	-
IEC 61300-3-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures Part 3-1: Examinations and measurements - Visual examination	EN 61300-3-1	-
IEC 61300-3-3	-	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	EN 61300-3-3	-
IEC 61300-3-4	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures Part 3-4: Examinations and measurements - Attenuation	EN 61300-3-4	-

CONTENTS

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 2-42: Tests – Static side load for strain relief

1 Scope

This part of IEC 61300 specifies a test to determine the influence of a side load applied to a cord assembled with a strain relief. The intention is to simulate a static load, due to a length of fibre cable, which would typically be experienced during service. Components should withstand side loads during optical transmission without degradation of the optical performance. Besides a boot, any feature that controls the bending radius of the fibre can be considered as strain relief.

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.

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

IEC 61300-3-3, *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 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examinations and measurements – Attenuation*

3 General description

The specimen is inserted into the test apparatus as shown in Figure 1. A load, equivalent to several metres of cable, is applied to the cable attached to the device under test and any changes in optical attenuation are recorded during the specified period of the test.

NOTE This test is applicable only to those passive optical components where the product design incorporates fibre cable pigtails.

4 Apparatus

4.1 Load generator

The load generator consists of a mass and a means of clamping the mass to the cable. The clamping shall not introduce micro- or macro-bending losses in the cable.

4.2 Holding fixture

The holding fixture consists of a means to hold the device under test in a stable and representative manner. For connectors, the holding fixture shall incorporate an adaptor where required. The holding fixture shall be capable of accommodating those devices where the input and output fibre cables are co-located on the same side of the device.

4.3 Optical source and detector

The optical source and detector used to measure changes in attenuation shall comply with that specified in IEC 61300-3-4.

A device to record attenuation over time (X, t) should be used where the optical detector does not have the capability to monitor continuously (i.e. where the sample rate is <10/min).

5 Procedure

5.1 Preparation of specimens

Prepare the specimens according to the manufacturer's instructions or as specified in the relevant specification. The device under test shall be terminated with a sufficient length of fibre cable to facilitate interfacing with the optical source and detector.

5.2 Pre-conditioning

Pre-condition the device under test for 2 h at the standard test conditions as given in IEC 61300-1, unless otherwise specified in the relevant specification.

5.3 Initial measurements

Complete initial examinations and measurements on the specimen as required by the relevant specification. Measure and record the attenuation of the device under test.

5.4 Conditioning

The body of the specimen shall be mounted in a representative manner onto the holding fixture (see Figure 1). The clamp to which the load can be applied shall be fastened to the cable in such a manner that the optical fibre or cable is not crushed. Unless otherwise specified, the point of load application shall be 20 cm to 30 cm from the end of the strain relief.

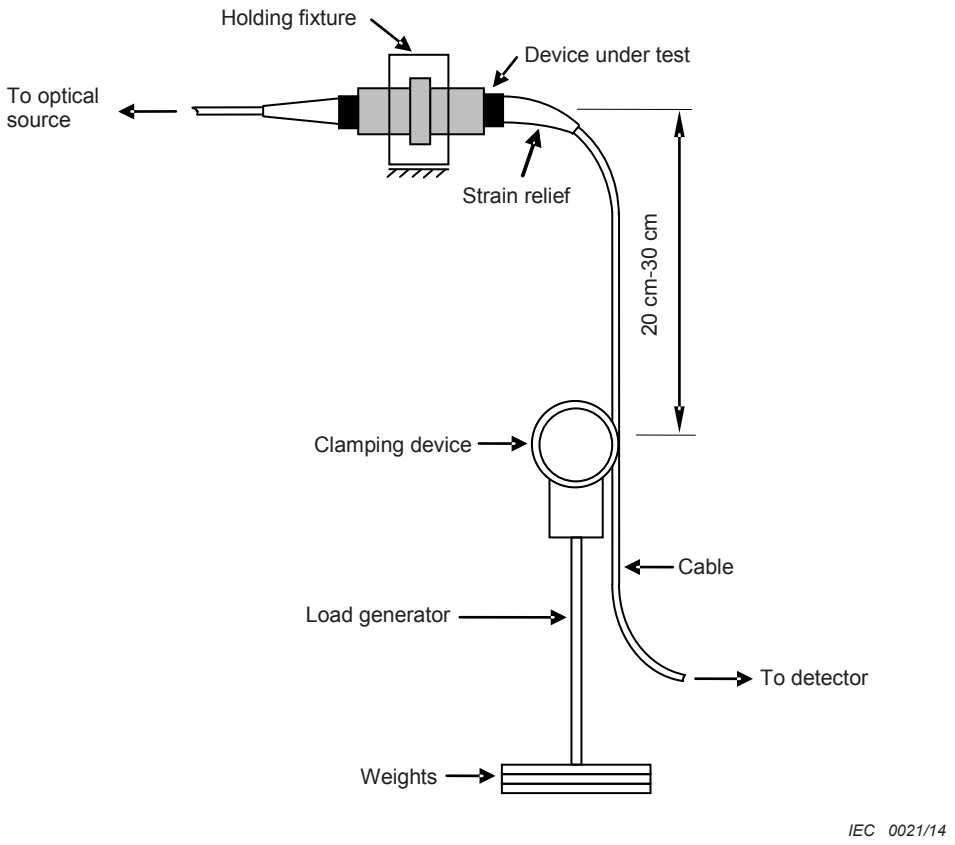

Figure 1 – Test apparatus for static side load

5.5 Measure the attenuation

Re-measure the attenuation to ensure that the fixturing and cable clamping have not affected the cable's attenuation.

5.6 Apply cable load

Gradually apply the specified load to the cable clamping fixture, being careful to avoid any sudden jerking or straining of the cable. Maintain the load for recommended duration (or as specified in the relevant specification).

5.7 Monitor attenuation

The attenuation of the specimen shall be continuously monitored during the test, as described in IEC 61300-3-3, unless otherwise specified in the relevant specification. Any deviation in the device attenuation from that measured in 5.5 shall be considered attributable to the cable/device interface, or fibre-to-fibre interfaces in the device.

If there are unacceptable changes in attenuation and it is questionable whether the cable itself may be at fault, a control test to determine cable contribution should be performed in the same manner using a piece of cable and two cable clamps.

5.8 Recovery

Allow the specimen to remain under standard test conditions for 2 h at the standard test conditions as given in IEC 61300-1, unless otherwise specified in the relevant specification.

5.9 Final measurements and examinations

On completion of the specified duration, remove all fixtures and make a final attenuation measurement to ensure that there is no permanent damage to the device under test. The results of the final measurement shall be within the limit established in the relevant specification.

Remove the device from the mounting fixture and, unless otherwise specified, visually examine the specimen in accordance with IEC 61300-3-1. Check for evidence of any degradation in the specimen. This may include, for example:

– broken, loose or damaged parts or accessories;
– breaking or damage to the cable jacket, seals, strain relief, or fibres;
– displaced, bent, or broken parts.

5.10 Repeated testing

Where required by the relevant specification, the test shall be repeated with the load applied in mutually perpendicular directions as permitted by the product design. For example, a product with a base plate extending beyond the fibre exit may prohibit loading in that direction. The number of mutually perpendicular directions employed shall be defined.

6 Severity

The severity of the test is dependent upon the tensile load applied and the duration, as recommended in Table 1.

Table 1 – Severities

Category	Component type	Load N	Duration min
C, U and E	Connectors and passive components – Reinforced cable	1,0 ± 0,1	60
C, U and E	Connectors and passive components – Secondary coated fibres	0,2 ± 0,02	5
C and U	Fibre management systems – Reinforced cables	1,0 ± 0,1	60
C and U	Fibre management systems – Cable elements	0,5 ± 0,1	5
O	Passive components – Reinforced cables	5,0 ± 0,5	5
O	Passive components – Primary and secondary coated fibres	2,3 ± 0,2	5

7 Details to be specified

The following details, as applicable, shall be specified in the relevant specification:

– magnitude of the load applied to the cable;
– duration of the load application;
– cable configuration;
– number of mutually perpendicular directions of load application;
– initial examinations, measurements and performance requirements;
– examinations and measurements during test and performance requirements;
– final examinations, measurements and performance requirements;
– deviations from this test method;
– additional pass/fail criteria;
– wavelength of the source.

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