

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –
Part 2-15: Tests – Torque strength of coupling mechanism**

**Dispositifs d'interconnexion et composants passifs à fibres optiques –
Méthodes fondamentales d'essais et de mesures –
Partie 2-15: Essais – Robustesse du mécanisme de verrouillage aux efforts
de torsion**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING
DEVICES AND PASSIVE COMPONENTS –
BASIC TEST AND MEASUREMENT PROCEDURES –****Part 2-15: Tests –
Torque strength of coupling mechanism**

FOREWORD

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International Standard IEC 61300-2-15 has been prepared by sub-committee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 1995. It constitutes a technical revision. Specific technical changes from the previous edition include reexamination of the pre-conditioning and rewriting of the entire composition according to the latest IEC Directives.

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

CDV	Result of voting
86B/2539/CDV	86B/2650/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.

A list of all parts of IEC 61300 series, published under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*, can be found on the IEC website.

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

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- withdrawn,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

Part 2-15: Tests – Torque strength of coupling mechanism

1 Scope

This part of IEC 61300 applies an overload torque to twist-type coupling mechanisms. It is applicable to threaded or bayonet-twist type coupling mechanisms. It can be used to ensure that the coupling mechanism of a connector set or connector-device combination will withstand the torsional loads likely to be applied during normal service.

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

3 General description

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A torsional load is smoothly applied to a mated connector set or connector-device combination in a manner that will over-torque threaded or bayonet twist-type coupling mechanisms. The torque is normally applied between the connector plug and the adapter or between the connector plug and the device being tested.

4 Apparatus

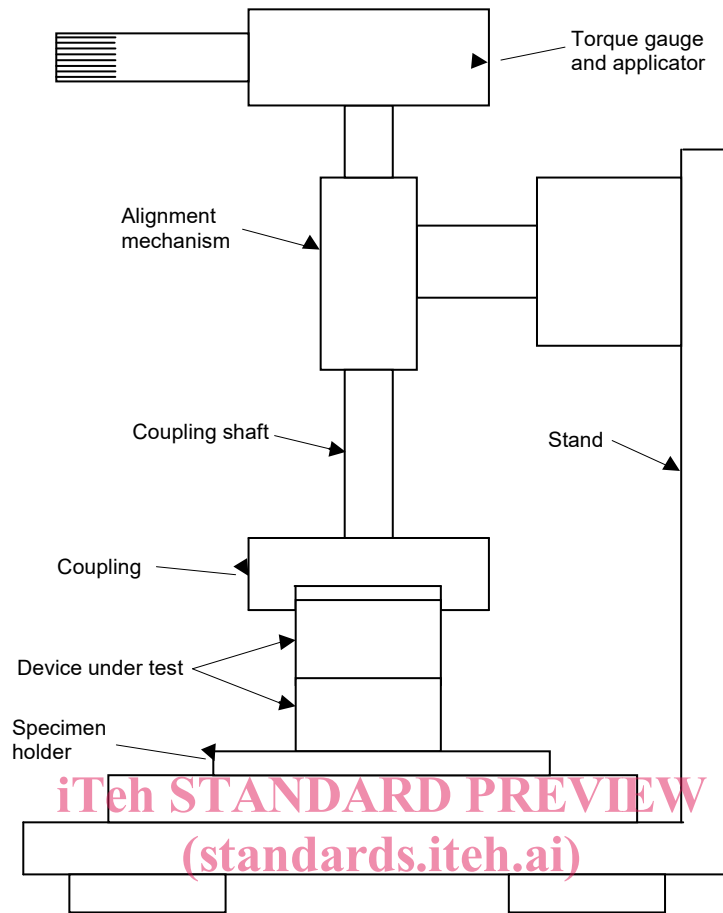
The test apparatus shall be capable of applying a torque, either manually or automatically, to a threaded or bayonet coupling nut while the adapter or device is held in place. An example of a test apparatus is shown in Figure 1. Some or all of the following apparatus components will be required.

4.1 Stand

Use a stand capable of ensuring that the specimen and the torque applicator are always held in the proper relationship during the test.

4.2 Specimen holder

The specimen holder shall be a floating fixture to which the device under test is mounted. The holder shall be prohibited from rotating, but shall otherwise be capable of moving freely in order to obtain the proper alignment between the coupling nut or cap and the adapter or other device under test.



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Figure 1 – Coupling torque tester

4.3 Coupling

Use a coupling designed to mate with the cap or coupling nut of the specimen in a such a manner that the torque is applied orthogonally to the coupling interface without the presence of any bending moment.

4.4 Coupling shaft

A coupling shaft shall be used to connect the torque applicator through the coupling to the device under test.

4.5 Alignment mechanism

Use an alignment mechanism to ensure that the coupling shaft is always in the proper position relative to the specimen. A clearance hole or low friction sleeve bearing will usually be satisfactory.

4.6 Torque applicator and gauge

Torque shall be applied using a torque wrench or equivalent and a torque gauge, having a torque range of no more than three times the required torque test value. A maximum reading torque indicator is preferred, but not required. The gauge shall be accurate to within 10 % of the applied torque value.

5 Procedure

5.1 Preparation of specimens

Mate the device to be tested according to the manufacturer's instructions. For screw type couplings, use a torque wrench to ensure that the couplings are tightened to the proper value.

5.2 Pre-conditioning

Pre-condition the prepared specimens for 2 h at the standard test conditions specified in IEC 61300-1 before beginning the test, unless otherwise specified in the relevant specification.

5.3 Specimen mounting

Securely mount each specimen under test, usually the connector adapter, switch, attenuator, etc., to the stationary portion of the test fixture. Connect the torque applicator to the plug cap or coupling nut through the coupling, coupling shaft and alignment mechanism.

5.4 Torque loading

Using the torque applicator, smoothly apply the specified torque to the cap or coupling nut at a nominal rate such that there is no element of impact loading. Unless otherwise specified in the relevant specification, maintain the specified torque for a minimum period of 15 s.

5.5 Post-test examination

Remove the torque load and remove the specimen from the mounting. Unless otherwise specified, examine the specimen and its component parts in accordance with the requirements of IEC 61300-3-1. Check for any evidence of cracking, bending or permanent deformation. Check for other damage which might impair its function, and any other pass/fail criteria specified in the relevant specification.

6 Severity

The severity of the test is dependant upon the magnitude of the applied torque and to a lesser extent the duration of the load. The magnitude and duration of the load shall be given in the relevant specification.

The following preferred severities are non-mandatory severities which may be applied to this test:

Overload torques
N m
0,4
0,6
0,8

7 Details to be specified

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

- magnitude of overload torque;
- required coupling torque;
- duration of torque application, if other than 15 s;

- pre-conditioning procedure, if different from 5.2;
 - recovery procedure;
 - specimen optical functioning or not functioning;
 - specimen mated or unmated;
 - initial examinations and measurements and performance requirements;
 - examinations and measurements during test and performance requirements, if required;
 - final examinations and measurements and performance requirements;
 - deviations from the test procedure;
 - additional pass/fail criteria.
-

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