

# INTERNATIONAL STANDARD

**IEC**  
**61300-2-17**

Second edition  
2003-02

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## **Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –**

### **Part 2-17: Tests – Cold**

*Dispositifs d'interconnexion et composants passifs  
à fibres optiques –  
Méthodes fondamentales d'essais et de mesures –*

*Partie 2-17:  
Essais – Froid*



Reference number  
IEC 61300-2-17:2003(E)

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## **Part 2-17: Tests – Cold**

### FOREWORD

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International Standard IEC 61300-2-17 has been prepared by subcommittee 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.

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

| FDIS          | Report on voting |
|---------------|------------------|
| 86B/1777/FDIS | 86B/1831/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.

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

IEC 61300 consists of the following parts, under the general title: *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*:

- Part 1: General and guidance
- Part 2: Tests
- Part 3: Examinations and measurements

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

Withdrawn  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

## **Part 2-17: Tests – Cold**

### **1 Scope**

This part of IEC 61300 details a procedure for determining the suitability of a fibre optic device to withstand environmental conditions of extended low temperature (cold), which may occur in use, storage and/or transport. This procedure does not assess the ability of a device to operate during temperature variations; in this case, IEC 61300-2-22 would be used.

### **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 60068-2-1, *Environmental testing – Part 2: Tests – Test A: Cold*

IEC 61300-2-22, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*

### **3 General description**

This procedure is conducted in accordance with IEC 60068-2-1, test Ab. The DUT is placed in a chamber at ambient temperature. The temperature is then lowered to test temperature at a rate not to exceed 1 °C/min averaged over a maximum period of 5 min, and maintained at that temperature for the specified duration. The chamber temperature is then raised to ambient and the DUT is allowed to attain ambient temperature before final measurements are made.

### **4 Apparatus**

#### **4.1 Chamber**

The apparatus consists of an environmental chamber in accordance with IEC 60068-2-1, test Ab. The chamber shall be capable of housing the DUT and of allowing access for measurement during conditioning, if required. It shall also be capable of maintaining the specified temperature and tolerance. Forced air circulation may be used to maintain homogeneous conditions. Care shall be taken to ensure that the DUT is not directly exposed to the heating or cooling elements.

#### **4.2 Other apparatus**

Additional apparatus may be necessary to perform the measurements specified by the relevant specification.

## 5 Procedure

Conduct the procedure in accordance with IEC 60068-2-1, test Ab.

Unless otherwise stated in the relevant specification

- include 1,5 m of cable in the climatic chamber for each port monitored during the test;
- if optical measurements are requested during the test by the relevant specification, these measurements shall be performed at a maximum interval of 1 hour.

### 5.1 Preconditioning

Unless otherwise stated in the relevant specification, maintain the DUT under standard atmospheric conditions for 2 hours minimum. Clean the mechanical and optical alignment parts of the DUT according to the manufacturer's instructions.

### 5.2 Initial measurements

Take initial examinations and measurements as required by the relevant specification.

### 5.3 Testing

**5.3.1** Place the specimen in the chamber in its normal operating position and make connections to the monitoring equipment

**5.3.2** Adjust the chamber temperature to the specified severity. The rate of change of temperature shall not exceed 1 °C/min, averaged over a maximum period of 5 min. Allow the DUT to reach temperature stability. The relevant specification may call for measurements to be made during the test and will give details of how this should be done.

**5.3.3** On the completion of the test, allow the DUT to remain in the chamber while the temperature is gradually raised to standard atmospheric conditions. The rate of change of temperature shall not exceed 1 °C/min, averaged over a maximum period of 5 min.

### 5.4 Recovery

Dry the specimen if necessary and allow it to remain under standard atmospheric conditions for a period of 2 hours. Clean the DUT according to the manufacturer's instructions.

### 5.5 Final measurements

Take final measurements as required by the relevant specification. Clean the mechanical and optical alignment parts of the DUT according to the manufacturer's instructions.

## 6 Severity

The severity consists of the combination of the temperature and duration of exposure:

- the duration of exposure shall be 96 hours;
- temperature deviation shall be less than  $\pm 3$  °C.

One of the following severities shall be specified for this procedure:

| Temperature<br>°C |
|-------------------|
| –40               |
| –25               |
| –10               |

## 7 Details to be specified

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

- temperature;
- initial examinations and measurements and performance requirements;
- examinations and measurements during test and performance requirements;
- final examinations and measurements and performance requirements;
- deviations from test procedure;
- additional pass/fail criteria.