



SLOVENSKI STANDARD  
SIST EN 2591:2001  
01-januar-2001

**Aerospace series - Elements of electrical and optical connection - Test methods - General**

Aerospace series - Elements of electrical and optical connection - Test methods - General

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Allgemeines

**iTeh STANDARD PREVIEW**  
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Série aérospatiale - Organe de connexion électrique et optique - Méthodes d'essais - Généralités

[SIST EN 2591:2001](https://standards.iteh.ai/catalog/standards/sist/6d414ca3-7957-4d3e-874e-ca81291ba9c6/sist-en-2591-2001)  
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**Ta slovenski standard je istoveten z: EN 2591:1992**

**ICS:**

49.060 Štejni in optični elementi za povezavo električnih in optičnih sistemov v letalski in vesoljski opremi in sistemih  
Aerospace electric equipment and systems

**SIST EN 2591:2001**

**en**

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EUROPEAN STANDARD

EN 2591:1992

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 1992

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Descriptors: Aerospace industry, aircraft equipment, elements of electrical and optical connection, test

English version

### Aerospace series - Elements of electrical and optical connection - Test methods - General

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

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## CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

### Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

According to the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1993, and conflicting national standards shall be withdrawn at the latest by April 1993.

## 1 Scope

This standard specifies the general requirements for the test methods of elements of electrical, optical and data transmission system connections used in aerospace applications.

## 2 References

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- IEC 50(581) International electrotechnical vocabulary - Chapter 581 : Electromechanical components for electronic equipment
- IEC 512-1 Electromechanical components for electronic equipment ; basic testing procedures and measuring methods - Part 1 : General.
- EN 2083, Copper and copper alloy conductors for electrical cables - Aerospace series <sup>1)</sup>
- EN 2084, Electric cables for general purpose with conductors in copper or copper alloy - Technical specification - Aerospace series <sup>1)</sup>
- EN 2234, Aerospace series - Fire resistant electrical cables - Technical specification <sup>2)</sup>
- EN 2346, Aerospace series - Fire resistant electrical cables - Dimensions, conductor resistance and mass <sup>3)</sup>.

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## 3 Definitions

The general terms used are those specified in IEC 50(581) and IEC 512-1 to which shall be added :

### 3.1 Element of electrical or optical connection <sup>4)</sup>

Component such as connector, module, etc. the purpose of which is to ensure the connection of circuits.

### 3.2 Flight cover (or protective cover)

Accessory designed to ensure, in flight, mechanical protection and sealing of front face of a non coupled connector.

### 3.3 Connector with built-in protection of contacts

Connector with characteristics such that the male or female contacts, mounted in a plug or receptacle, cannot be touched by the front of the connector to which it is coupled (scoop-proof) and in which, in the event of accidental coupling of two parts of connector equipped with male contacts, no electrical contact can take place.

### 3.4 Initial measurement

Examination or measurement of characteristics carried out to determine the magnitude of the variations produced by the stress or stresses applied. This examination or measurement is carried out at the end of the pre-conditioning and under normal atmospheric conditions of measurement.

- 1) Published as AECMA Standard at the date of publication of the present standard
- 2) In preparation at the date of publication of the present standard.
- 3) Published as AECMA pre-standard at the date of publication of the present standard.
- 4) In the test standards the term « element of connection » shall be used.

### 3.5 Final measurement

Examination or measurement of characteristics carried out at the end of the recovery to assess the condition of the specimen after the test and to determine the magnitude of the variations in characteristics in relation to the values recorded during the initial measurement.

### 3.6 Flammability

A product is considered to be « non-flammable » when the combustion due to exposure of a given duration to a standard external flame remains localized and stops spontaneously after withdrawal of the flame.

### 3.7 Fire resistance

A product is considered to be « fire-resistant » when, being subjected to a standard flame :

- it retains its electrical role for six minutes
- the flame does not propagate from the other side of the support before the twentieth minute.

### 3.8 Values of alternating voltage and current

Unless otherwise indicated, alternating voltage and current are indicated in root mean square values.

### 3.9 Line data bus

Pair of twisted wires, shielded, having a specified impedance, a matched impedance at its two ends and used for data transport.

### 3.10 Branch line

Section of twisted wires, shielded, with a specified impedance, which connects equipment to a bus line.

### 3.11 Line coupler

Element of electrical or optical connection the purpose of which is to shunt the transmission signals from a bus line to equipment.

### 3.12 Line coupler, single

Coupler consisting of one line and one branch.

### 3.13 Line coupler, double

Coupler consisting of one line and two branches.

### 3.14 In-line splice

Permanent element of electrical connection for two-wire cables.

### 3.15 Line termination

End line component the purpose of which is to match the bus line to its characteristic impedance.

### 3.16 Branch termination

End branch termination the purpose of which is to possibly substitute equipment.

### 3.17 Recovery

Treatment of a specimen, after conditioning, in order that the properties of the specimen may be stabilized before measurements.

#### 4 Test conditions

**4.1** The test methods are drafted so that the test may be carried out either individually or included into a test file. This is why « If applicable » has been added to the titles « Initial measurements » and « Final measurements ».

When the test is carried out individually, the measurements are applicable so that the effect of the test on the performances of the specimen can be evaluated.

When the test is included into a test file, the initial and final states of the specimen shall be checked at the beginning and the end of the test file. The initial and final measurements indicated in each test method are thus not applicable to each test.

**4.2** Unless otherwise indicated in the test method, technical specification or product standard, the test conditions shall be as follows :

- temperature :  $(23 \pm 5)$  °C ;
- atmospheric pressure : 86 kPa to 106 kPa (860 mbar to 1060 mbar) ;
- relative humidity : 45 % to 75 %.

The temperature and humidity shall remain constant throughout a series of measurements.

Unless otherwise indicated in the technical specification, the cables used for the tests shall be in accordance with EN 2083 and EN 2084 or EN 2234 and EN 2346.

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#### 5 List of test methods

See table 1.

Table 1

EN 2591 part	Designation of the test
A1	Visual examination
A2	Examination of dimensions and mass
B1	Contact resistance - Low level
B2	Contact resistance at rated current
B3	Electrical continuity at microvolt level
B4	Discontinuity of contacts in the microsecond range
B5	Housing (shell) electrical continuity
B6	Measurement of insulation resistance
B7	Voltage proof test
B8	Temperature rise due to rated current
B9	Current temperature derating

continued

Table 1 (continued)

EN 2591 part	Designation of the test
B10	Electrical overload
B11	Capacitance measurement
B12	Surface transfer impedance
B13	Shielding effectiveness from 100 MHz to 1 GHz
B14	Lightning proofness
B15	Impedance measurement in open circuit
B16	Engagement of contacts
C1	Endurance at temperature
C2	Climatic sequence
C3	Cold/low pressure and damp heat
C4	Damp heat steady state
C5	Rapid change of temperature
C6	Mould growth (standards.iteh.ai)
C7	Salt mist
C8	Sand and dust <a href="https://standards.iteh.ai/catalog/standards/sist/6d414ca3-7957-4d3e-874e-ea81291ba9c6/sist-en-2591-2001">SIST EN 2591:2001</a>
C9	Dry heat <a href="https://standards.iteh.ai/catalog/standards/sist/6d414ca3-7957-4d3e-874e-ea81291ba9c6/sist-en-2591-2001">https://standards.iteh.ai/catalog/standards/sist/6d414ca3-7957-4d3e-874e-ea81291ba9c6/sist-en-2591-2001</a>
C10	Cold
C11	Low air pressure
C12	Air leakage
C13	Driving rain (artificial)
C14	Immersion at low air pressure
C15	Fluid resistance
C16	Ozone resistance
C17	Flammability
C18	Fire-resistance
C19	Gas-tightness of solderless wrapped connections
C20	Simulated solar radiation at ground level
C21	Damp heat, cyclic test
C22	Hermeticity
C23	Thermal shock
C24	Interfacial sealing

continued



Table 1 (continued)

EN 2591 part	Designation of the test
D1	Acceleration, steady state
D2	Shock
D3	Sinusoidal and random vibrations
D4	Transverse load (external bending moment)
D5	Axial load
D6	Mechanical endurance
D7	Durability of contact retention system and seals (Maintenance ageing)
D8	Mating and unmating forces
D9	Contact retention in insert
D10	Insert retention in housing (axial)
D11	Insert retention in housing (torsional)
D12	Contact insertion and extraction forces
D13	Holding force of grounding spring system
D14	Unmating of lanyard release connectors
D15	Test probe damage (female contact)
D16	Contact bending strength
D17	Tensile strength (crimped connection)
D18	Gauge insertion and extraction forces in and out of a female contact
D19	Stability of male contacts in insert
D20	Mechanical strength of rear accessories
D21	Free fall
D22	Locking wire hole strength
D23	Available
D24	Stripping force, solderless wrapped connections
D25	Unwrapping, solderless wrapped connections
D26	Contact retention system effectiveness (removable contact walkout)
D27	Robustness of protective cover attachment

continued