



**SLOVENSKI STANDARD**  
**SIST EN 2996-004:2009**  
**01-junij-2009**

**Aeronavtika - Odklopniki, tripolni, temperaturno kompenzirani, nazivni tok od 1 A do 25 A - 004. del: S signalnim kontaktom - Standard za proizvod**

Aerospace series - Circuit breakers, three-pole, temperature compensated, rated current 1 A to 25 A - Part 004: With signal contact - Product standard

Luft- und Raumfahrt - Schutzschalter, dreipolig, Temperaturkompensiert, Nennströme von 1 A bis 25 A - Teil 004: Mit Signalkontakt - Produktnorm

Série aérospatiale - Disjoncteurs tripolaires compensés en température, intensités nominales 1 A à 25 A - Partie 004 : Avec contact de signalisation - Norme de produit

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**ICS:**

49.060 Štejni aparati in oprema za letalstvo in vesolje Aerospace electric equipment and systems

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EUROPEAN STANDARD

EN 2996-004

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2006

ICS 49.060

English Version

## Aerospace series - Circuit breakers, three-pole, temperature compensated, rated current 1 A to 25 A - Part 004: With signal contact - Product standard

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This European Standard was approved by CEN on 5 June 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. 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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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**Contents**

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Dimensions and mass.....	4
4 Characteristics .....	6
5 Designation .....	11
6 Rated current code .....	11
7 Delivery codes .....	11
8 Marking .....	12
9 Technical specification .....	12

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## Foreword

This European Standard (EN 2996-004:2006) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

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

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 February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 2996-004:2006 (E)****1 Scope**

This standard specifies the characteristics of three-pole circuit breakers, temperature compensated with a rated current from 1 A to 25 A, used in aircraft on-board circuits at a temperature between  $-55\text{ }^{\circ}\text{C}$  and  $125\text{ }^{\circ}\text{C}$  for ratings  $\leq 15\text{ A}$  and  $-55\text{ }^{\circ}\text{C}$  to  $90\text{ }^{\circ}\text{C}$  for ratings  $> 15\text{ A}$  and at an altitude of 22 000 m max.

These circuit breakers are operated by a push-pull type single pushbutton (actuator), with delayed action "trip-free" tripping with a signal contact which is open when main contacts are closed, and inversely.

They will continue to function up to the short-circuit current.

**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 2996-001, *Aerospace series – Circuit breakers, three-pole, temperature compensated, rated current 1 A to 25 A – Part 001: Technical specification.*

EN 3155-016, *Aerospace series – Electrical contacts used in elements of connection – Part 016: Contacts, electrical, male, type A, crimp, class S – Product standard.*

EN 3841-305, *Aerospace series – Circuit breakers – Test methods – Part 305: Short-circuit performance.*

EN 6113, *Aerospace series – Circuit breaker, connecting and attachment hardware.*<sup>1)</sup>

TR 6083, *Aerospace series – Cut-outs for installation of electrical components.*<sup>2)</sup>

MIL-I-81969/1A, *Installing and removal tools, connector electrical contact, type III, class 2, composition C.*<sup>3)</sup>

MIL-I-81969/14C, *Installing and removal tools, connector electrical contact, type III, class 2, composition B.*<sup>3)</sup>

FED-STD-595B, *Colors used in Government Procurement.*

**3 Dimensions and mass****3.1 Dimensional characteristics**

The circuit breakers do not have to correspond to the pictorial illustration, only the dimensions given shall be adhered to.

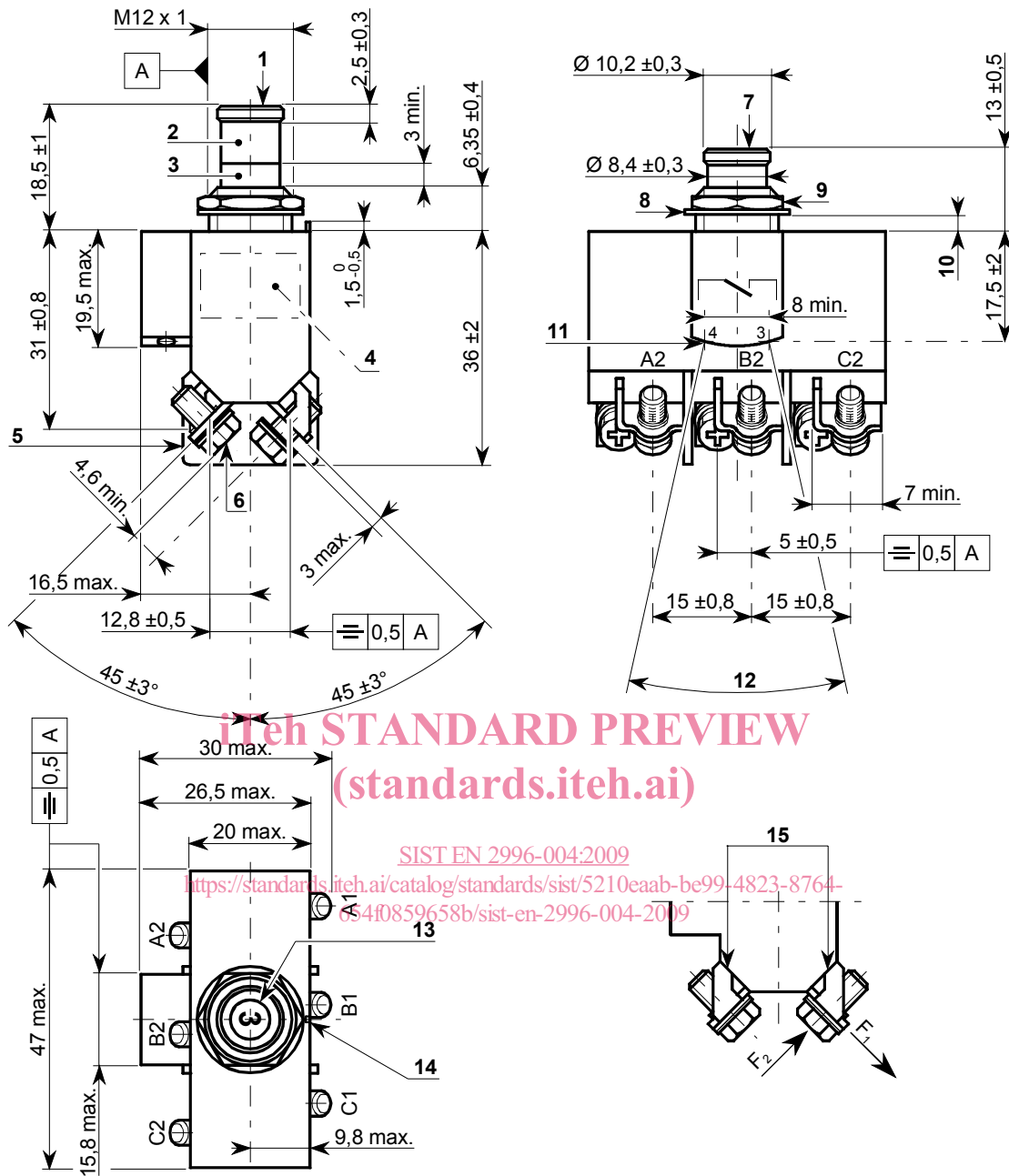
Dimensions are in millimetres.

See Figure 1.

1) Published as AECMA Prestandard at the date of publication of this standard.

2) Published as AECMA Technical Report at the date of publication of this standard.

3) Published by: Department of Defense (DOD), the Pentagon, Washington D.C. 20301 USA.



### Key

- |  |  |
|--|--|
| 1 Push button released                             | 10 1 to 3 max.   |
| 2 Green colour according to FED-STD-595B No. 34090 | 11 Gauge 20 connection pins according to EN3155-016M2018                   |
| 3 White  | 12 Indicative value 25° (see note)   |
| 4 Marking area, see Clause 8.                      | 13 Rated current marking (white on green)                                  |
| 5 Circuits dividing partition                      | 14 Positioning lug in accordance with the panel cut-out, as per TR6083C202 |
| 6 Connecting screw and washer                      | 15 Terminals shape free  |
| 7 Push button pressed                              |  |
| 8 Lockwasher                                       |  |
| 9 Attachment nut                                   |  |

**F1 and F2:** see EN 2996-001 "Mechanical tests".

**NOTE** Tools noted in subclause 4.2.4 shall be applied without interfering with the terminal 2 connection. Even if the circuit breakers are grouped.

**Figure 1 — Configuration – Dimensions – Tolerances**

**EN 2996-004:2006 (E)****3.2 Electrical diagram**

See Figure 2.

**Terminal No.:**

1 and 2: Main contacts

3 and 4: Signal contacts

**Figure 2 — Electrical diagram**

**3.3 Mass**

64 g max. (delivery code A including hardware).

**3.4 Panel mounting**

See EN 2996-001.

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**4 Characteristics****4.1 Material, surface treatment**

See EN 2996-001.

**4.2 Mechanical characteristics****4.2.1 Fasteners**

See EN 6113.

**4.2.2 Recommended tightening torque of attaching nut for installation**

(4,75 ± 0,25) Nm

**4.2.3 Recommended tightening torque of connection hardware for installation**

(1,6 ± 0,1) Nm



**4.2.4 Recommended tools for contacts of auxiliary contact insertion and extraction**

- plastic MIL-I-81969/14-11;
- metallic MIL-I-81969/1-02.

**4.2.5 Resistance to vibrations****4.2.5.1 Combined test: ambient temperature at 70 °C and vibrations**

- Sinusoidal: 10  $g_n$ , see EN 2996-001.  
 Random: 5,8  $g_n$ , see EN 2996-001.  
 Low frequencies: 10  $g_n$ , see EN 2996-001.

**4.2.5.2 Combined test: ambient temperature at 85 °C, altitude and vibrations**

- Sinusoidal: 3  $g_n$ , see EN 2996-001.

**4.2.6 Resistance to shocks**

- 50  $g_n$ , see EN 2996-001.

**4.2.7 Mechanical endurance**

- See Table 6.

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**4.3 Environment characteristics****4.3.1 Humidity**

- See EN 2996-001.

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**4.3.2 Corrosion**

- See EN 2996-001.

**4.3.3 Contaminating liquids**

- See EN 2996-001.

**4.3.4 Overvoltage caused by lightning**

- See EN 2996-001.

**4.4 Electrical characteristics****4.4.1 Nominal voltages of main contacts**

- See Table 1.

**Table 1**

<b>Nominal voltage</b>	115/200 V a.c., 360 Hz to 800 Hz
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