



SLOVENSKI STANDARD
oSIST prEN 3662-001:2020

01-november-2020

Aeronavtika - Odklopniki, tripolni, temperaturno kompenzirani, nazivni toki od 20 A do 50 A - 001. del: Tehnična specifikacija

Aerospace series - Circuit breakers, three-pole, temperature compensated, rated currents 20 A to 50 A - Part 001: Technical specification

Luft- und Raumfahrt - Schutzschalter, dreipolig, temperaturkompensiert, Nennströme von 20 A bis 50 A - Teil 001: Technische Lieferbedingungen

Série aérospatiale - Disjoncteurs tripolaires compensés en température, intensités nominales 20 A à 50 A - Partie 001 : Spécification technique

<https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08b6ee6c45d/osist-pr-en-3662-001-2020>

Ta slovenski standard je istoveten z: prEN 3662-001

ICS:

29.120.50	Varovalke in druga nadtokovna zaščita	Fuses and other overcurrent protection devices
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

oSIST prEN 3662-001:2020

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 3662-001:2020](https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020)

<https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 3662-001

September 2020

ICS

Will supersede EN 3662-001:2006

English Version

Aerospace series - Circuit breakers, three-pole, temperature compensated, rated currents 20 A to 50 A - Part 001: Technical specification

Série aérospatiale - Disjoncteurs tripolaires compensés
en température, intensités nominales 20 A à 50 A -
Partie 001 : Spécification technique

Luft- und Raumfahrt - Schutzschalter, dreipolig,
temperaturkompensiert, Nennströme von 20 A bis 50
A - Teil 001: Technische Lieferbedingungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions.....	6
4 Description.....	6
5 Design.....	6
5.1 Materials	6
5.1.1 Metallic materials	6
5.1.2 Insulation materials.....	6
5.2 Design.....	6
5.2.1 Insulating box.....	6
5.2.2 Free release mechanism.....	6
5.2.3 Attachment.....	6
5.2.4 Electrical connection units.....	7
5.2.5 Control actuator	7
5.2.6 Rating inviolability	7
5.2.7 Leakage lines	7
5.2.8 Protection against non-release	7
6 Characteristics	8
6.1 General characteristics.....	8
6.2 Ratings	8
6.3 Nominal voltage of main contacts.....	8
6.4 Signal contact performances.....	8
6.5 Dimensional characteristics	9
6.6 Recommended panel mounting dimensions.....	9
7 Tests.....	9
7.1 Mechanical tests	9
7.2 Environmental tests.....	10
7.3 Electrical tests	15
8 Qualification tests	17
8.1 Sampling.....	17
8.2 Material tests.....	20
8.3 Periodic checks for qualification maintenance.....	20
9 Quality assurance.....	20
10 Marking.....	20
11 Delivery conditions	20
12 Packaging.....	21
13 Storage	21
13.1 Definition	21
13.2 Storage conditions.....	21

13.3 Storage duration	21
Bibliography	22

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[oSIST prEN 3662-001:2020
https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020](https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020)

prEN 3662-001:2020 (E)

European foreword

This document (prEN 3662-001:2020) 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-STAN, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 3662-001:2006.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 3662-001:2020](https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020)

<https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfaec6c45d/osist-pren-3662-001-2020>

1 Scope

This document specifies the three-pole temperature compensated circuit breakers with signal contacts, polarized or not, rated from 20 A to 50 A and used in aircraft on-board circuits. It describes specific environmental, electrical and mechanical characteristics and the stringency of tests to be applied according to test methods of EN 3841-100.

These circuit breakers are intended for use in aircraft with electrical supplies in accordance with EN 2282 (all categories).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 2083, *Aerospace series - Copper and copper alloys conductors for electrical cables - Product standard*

EN 2282, *Aerospace series - Characteristics of aircraft electrical supplies*

EN 2825, *Aerospace series - Burning behaviour of non metallic materials under the influence of radiating heat and flames - Determination of smoke density*

EN 2826, *Aerospace series - Burning behaviour of non metallic materials under the influence of radiating heat and flames - Determination of gas components in the smoke*

EN 3662-005, *Aerospace series - Circuit breakers, three-pole, temperature compensated, rated current 20 A to 50 A - Part 005: With polarized signal contact - Product standard*

oSIST prEN 3662-001:2020

EN 3662-006, *Aerospace series - Circuit breakers, three-pole, temperature compensated, rated current 20 A to 50 A - Part 006: With polarized signal contact - Bus-bar version - Product standard*

EN 3841 (series), *Aerospace series — Circuit breakers — Test Methods*

EN 3844-1, *Aerospace series - Flammability of non-metallic materials - Part 1: Small burner test, vertical - Determination of the vertical flame propagation*

TR 6083 ¹⁾, *Aerospace series — Cut-outs for installation of electrical components*

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

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

1) Published as ASD-STAN Technical Report at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), <http://www.asd-stan.org/>.

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

prEN 3662-001:2020 (E)**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 3841-100 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Description

These circuit breakers are operated by a “push-pull” type single pushbutton (actuator) and with delayed action “trip-free” tripping. Their function is ensured up to the short-circuit current.

5 Design**5.1 Materials****5.1.1 Metallic materials**

All metallic parts shall be resistant to corrosion or finished against corrosion. When dissimilar materials are in close contact, an adequate protection against corrosion shall be used so that the electromotive force of the galvanic couple does not exceed 0,25 V.

When bimetals are used, an eventual corrosion shall not affect the good operation of the circuit breaker.

5.1.2 Insulation materials

The insulating parts shall be made of auto-extinguishing or non-flammable materials; they shall not emit damaging or explosive vapours, even in presence of fire or internal electric arc.

They shall be insensitive to moulds and microorganisms action.

Application of any material or protective coating, which might crack, break or flake shall be forbidden.

Materials which are not specified, or which are not specially described, shall be as light as possible for the requested use.

Materials shall be selected according to security criteria (toxicity, smoke density) as defined in contractual documents.

5.2 Design**5.2.1 Insulating box**

The insulating box shall integrate besides the mechanism, the connection and attachment unit.

5.2.2 Free release mechanism

Design of circuit breaker mechanism shall allow free release, i.e. the circuit breaker cuts out in case of overload and remains cut out even if the actuator is kept by force in engaged position.

A new engagement of circuit breaker is only possible after a first total release of the control actuator.

The operation in these conditions shall not affect further performances of the circuit breaker.

5.2.3 Attachment

All visible parts shall be black coloured and non-reflective.

5.2.4 Electrical connection units

They shall be able to receive the lugs (or contacts).

5.2.5 Control actuator

In engaged position, the visible part of the control actuator shall be of the colour stated in the product standard. In disengaged (or opened) position, the control actuator shall show a white strip.

The outer part of this actuator shall be isolated from all under voltage parts.

The control actuator shall not stay in a transition position or give a false indication about the circuit breaker condition. It shall not be removable.

When pushing it, power contacts of the circuit breaker engage and indicating contact opens.

When pulling it, power contacts of the circuit breaker open and indicating contact closes.

The circuit breaker rating is indicated in indelible white colour on the front part of the control actuator.

The product standard gives the digits positioning.

5.2.6 Rating inviolability

The circuit breaker shall be designed in such a way that the calibration unit cannot be reached without breaking a sealing.

5.2.7 Leakage lines

The leakage lines and the minimal space to be foreseen between the under voltage parts and any other part of the circuit breaker made of non-insulating material, as well as between the under voltage parts of opposite polarity, shall be sufficient to avoid any default or arc tracking in all uses and climatic conditions.

5.2.8 Protection against non-release

Electrical overload happening on a circuit breaker locked in its engaged position (sticked contacts or non-operating release mechanism), shall cause the opening of the circuit by circuit breaker destruction without any fire or important smoke release.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

oSIST prEN 3662-001:2020
<https://standards.iteh.ai/catalog/standards/sist/43526798-a6ca-4771-8cde-08bfec6c45d/osist-pr-en-3662-001-2020>

prEN 3662-001:2020 (E)

6 Characteristics

6.1 General characteristics

See Table 1.

Table 1 — General characteristics

Designation	Requirements
Assembly	See product standard.
Mass	See product standard.
Operational altitude	See product standard.
Power contact connection	See product standard.
3 (three) input terminals on power supply side (identified by digit A1, B1, C1)	
3 (three) output terminals on distribution side (identified by digit A2, B2, C2)	
Signal contact connection, circuit closed when circuit breaker is on release	Crimp contacts size 20 See product standard.
Operational ambient temperatures limits	From -55 °C to 90 °C
Temperature compensation	From -55 °C to 90 °C See product standard.
Rating marking	On control actuator (indelible white)

6.2 Ratings

See product standard.

6.3 Nominal voltage of main contacts

See product standard.

6.4 Signal contact performances

See Table 2.

Table 2 — Signal contact performances

Signal contact	Type of load	28 V d.c.	5 V d.c.	5 V a.c. ^a	28 V d.c.
	Resistive	≤ 0,5 A	≥ 3 mA	Not used	≥ 3 mA
	Lamp	≤ 0,2 A	Not used	0,23 A	Not used

^a Applicable on version without diode only.

The circuit breaker status signalling function, open or closed shall be guaranteed after all the tests described in this specification.

NOTE In order to avoid any deterioration of the signalization circuit (contact and diode), the reception electrical test could be performed without exceeding the value recommended of 60 mW max. at 28 V d.c. max. (resistive load).

6.5 Dimensional characteristics

See product standard.

6.6 Recommended panel mounting dimensions

Panel cut-out:	The panel cut-out is in accordance with the designations TR 6083 C202 (for EN 3662-005) and TR 6083 C400 (for EN 3662-006).
Spacing:	60 mm horizontal and 45 mm vertical from the centres of the mounting holes.
Panel thickness:	1 mm to 3 mm.

7 Tests

7.1 Mechanical tests

See Table 3.

Table 3 — Mechanical tests

Tests		Requirements		
Visual check		See EN 3841-201.		
Operational force	Closing force (push)	See EN 3841-502.	20 N to 80 N	
	Opening force (pull)		5 N to 45 N	
Mechanical strength	Actuator	Travel	See EN 3841-501. For value, see product standard.	
		Transverse load	≥ 110 N	
		Longitudinal load	Push	See EN 3841-503. ≥ 110 N
	Pull		≥ 110 N	
	Attachment nut	Tightening torque	See EN 3841-504.	≥ 5,5 N.m
		Rotation torque		≥ 3 N.m
	Main contact connection	Screw tightening torque	See EN 3841-505.	≥ 2,5 N.m
		Tensile force as per F_1 (see Figure 1 in product standard).		≥ 110 N
		Pressure force as per F_2 (see Figure 1 in product standard)		≥ 55 N
	Signal contact connection (size 20)	See product standard.		
		Insertion force Insertion possible without tools	See EN 3841-509.	≤ 6 N
		Extraction force		≤ 15 N
		Contact retention force (pre-load 13,5 N)	See EN 3841-510.	≥ 67 N shift ≤ 0,3 mm
		Radial load	See EN 3841-510.	≥ 30 N
Recommended tools: - plastic: MIL-I-81969/14-11 - metallic: MIL-I-81969/1-02		See MIL-I-81969/1A and MIL-I-81969/14C		