BS EN 2665-001:2013

BSI Standards Publication

Aerospace series — Circuit breakers, three-pole, temperature compensated, rated current 20 A to 50 A

Part 001: Technical specification

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee ACE/6, Aerospace avionic electrical and fibre optic technology.

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 83443 1

ICS 49.060

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2013.

Amendments issued since publication

Date	Text affected

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 2665-001

December 2013

ICS 49.060

English Version

Aerospace series - Circuit breakers, three-pole, temperature compensated, rated current 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 European Standard was approved by CEN on 28 September 2013.

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Ref. No. EN 2665-001:2013 E

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Full document details: BS EN 2665-001:2013

Contents

Page

Foreword 3
1 Scope 4
2 Normative references 4
3 Terms and definitions 4
4 Description 4
5 Design 5
6 Characteristic 6
7 Tests 7
8 Qualification tests 15
9 Quality assurance 18
10 Marking 18
11 Delivery conditions 18
12 Packaging 19
13 Storage 19

Documents
Document Sharing Hub
Full document details: BS EN 2665-001:2013

Foreword

This document (EN 2665-001:2013) 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 June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

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.

This document supersedes EN 2665-001:1999.

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

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1 Scope

This European Standard specifies the three-pole temperature compensated circuit breakers without signal contacts, 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.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 or copper alloy conductors for electrical cables — Product standard*

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

EN 2665-004, *Aerospace series — Circuit breakers, three-pole, temperature compensated, rated current 20 A to 50 A — Part 004: UNC thread terminals — Product standard*

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 3841-100 (all parts), *Aerospace series — Circuit breakers — Test Methods — Part 100: General*

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

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standards*

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

3 Terms and definitions

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

4 Description

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

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1) Published as ASD-STAN Technical Report at the date of publication of this standard. http://www.asd-stan.org/

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Full document details: BS EN 2665-001:2013

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 on 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 colored and non-reflective.

5.2.4 Electrical connection units

They shall be able to receive the lugs.

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.

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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.

When pulling it, power contacts of the circuit breaker open.

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 arcing 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.

6 Characteristic

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.
3 input terminals on power supply side (identified by digit A1, B1, C1)	See product standard.
3 output terminals on distribution side (identified by digit A2, B2, C2)	
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)

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