

Specification for

Hybrid remote power controllers — General requirements

UDC 621.316.57:629.7

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Policy Committee (ACE/-) to Technical Committee ACE/6, upon which the following bodies were represented:

- British Airways
- British Cable Makers' Confederation
- British Rubber Manufacturers' Association
- Civil Aviation Authority (Airworthiness Division)
- Electronic Components Industries Federation
- Ministry of Defence
- Society of British Aerospace Companies Ltd.

This British Standard, having been prepared under the direction of the Aerospace Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 July 1993

© BSI 01-2000

The following BSI references relate to the work on this standard:
Committee reference ACE/6
Draft for comment 90/78217 DC

ISBN 0 580 22193 8

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
1 Scope	1
2 Normative references	1
3 Definitions	1
4 General characteristics	1
5 Design characteristics	3
6 Operating characteristics	5
7 Environmental conditions and test procedures	8
8 Qualification tests	9
Figure 1 — Diagrammatic illustration of a type A hybrid remote power controller	4
Figure 2 — Diagrammatic illustration of a type B hybrid remote power controller	4
Figure 3 — Timing sequence diagram	5
Table 1 — Strength of threaded terminals (static value of pull and torque)	2
Table 2 — Strength of threaded mounting studs (static value of pull and torque)	3
Table 3 — Controller rating and associated wire size for testing	6
Table 4 — Endurance tests for controllers	7
Table 5 — Endurance tests for circuit breakers	7
Table 6 — Contact voltage drop	7
Table 7 — Trip characteristics	7
Table 8 — Prospective short-circuit calibration currents	8
Table 9 — Environmental conditions and test procedures	8
Table 10 — Qualification tests	10
List of references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Aerospace Standards Policy Committee. It is identical with ISO 10296:1992 *Aircraft — Hybrid remote power controllers — General requirements* published by the International Organization for Standardization (ISO).

Cross-reference

International Standard	Corresponding British Standard
ISO 7137:1987	BS 2G 229:1987 <i>Schedule for environmental conditions and test procedures for airborne equipment</i>

The Technical Committee has reviewed the provisions of ISO 2618:1985, to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This International Standard specifies the general design and performance requirements of hybrid remote power controllers for aircraft. They consist of an electromagnetic device or a combined electromagnetic/solid-state device, for load switching, and a solid-state control circuit for control of the load-switching devices.

On aircraft, remote power controllers are used to close and open the electrical circuit and to protect wiring and equipment in the event of overload or short-circuit conditions.

The load-switching device and solid-state control circuit may be mounted in a common enclosure or may be discrete inter-connected units.

NOTE 1 This International Standard recognizes the need to have hybrid units which are, as far as practical, interface-compatible with fully solid-state power controllers.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2678:1985, *Environmental tests for aircraft equipment — Insulation resistance and high voltage tests for electrical equipment*.

ISO 7137:1987, *Aircraft — Environmental conditions and test procedures for airborne equipment*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1

remote power controller

device providing a power switch which presents a low impedance to the flow of current from its supply to its load terminal when in the ON state and a high impedance in the OFF state

NOTE 2 The state of the power switch normally conforms to that represented by the last command signal applied to the controller.

NOTE 3 The controller reverts to the OFF state on detection of an electrical overload or other specified condition regardless of the command signal. A resetting operation is required to terminate the trip state. Trip-free action prevents the ON state being held in the presence of an overload trip condition.

NOTE 4 The state of the power switch is represented by an indication signal supplied from the controller.

NOTE 5 A remote controller may be fully solid-state or hybrid.

3.2

hybrid remote power controller

combination of an electromagnetic or combined electromagnetic/solid-state device(s), for load switching, and a solid-state control circuit

NOTE 6 The load-switching device and solid-state control circuit may be mounted in a common enclosure or may be discrete inter-connected units.

3.3

trip-free

when a controller has tripped open on overcurrent or on short-circuit, a trip-free feature prevents subsequent reclosure unless preceded by a reset sequence

4 General characteristics

4.1 Materials

Materials shall be used which will enable the controllers to meet the performance requirements of this International Standard.

Materials used shall not support combustion, give off noxious gases in harmful quantities, give off gases in quantities sufficient to cause contamination of any part of the controller, or form current-carrying tracks when subjected to any of the tests specified herein.

Unless otherwise specified, the selection of materials shall be such as to provide a shelf life of ideally 20 years without affecting the operation of the controller. Parts having a significantly shorter life, such as seals, shall be declared.

4.2 Construction

Power controllers shall be of design, construction, minimum mass and physical dimensions compatible with requirements. Controllers shall be designed so as to ensure proper operation when mounted in any attitude.

The construction of the controllers shall preclude mechanical damage, flaking of the finish, loosening of terminals, or deterioration of marking when subjected to the test methods of this International Standard.

4.3 Terminals

4.3.1 Main terminals

There are two acceptable standards of main terminal.