



British Standard: Aerospace Series

Specification for

Proximity switches for aircraft

Part 3. Requirements for inductive proximity switches

Interrupteurs de proximité pour les aéronefs

Partie 3. Exigences des interrupteurs de proximité inductifs

Nahschalter für Flugzeuge

Teil 3. Anforderungen an induktiven Nahschaltern

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Foreword

This British Standard has been prepared at the request of the Aerospace Industry Standards Committee and Society of British Aerospace Companies to cover proximity switches for use in unprotected positions on aircraft. Part 3 deals with specific requirements for inductive proximity switches sensing by alternating electro-magnetic fields.

Other Parts of the standard are:

Part 1 General requirements;

Part 2 Requirements for magnetic proximity switches incorporating reed contact units.

Further Parts may be added in due course covering other basic methods of operations.

Specification

NOTE. It is essential that this Part be read in conjunction with Part 1, issued separately.

1. Scope

Part 3 of this British Standard specifies the detailed requirements for inductive proximity switches suitable for use in nominal 28 V d.c. systems in aircraft. These requirements are additional to those specified in Part 1 of this standard.

2. References

Reference is made in this standard to the following British Standards.

- G 218 Proximity switches for aircraft
Part 1 General requirements
- 3G 100 General requirements for equipment in aircraft
Part 2 All equipment
Section 3 Environmental conditions
Subsection 3.2 Temperature — pressure requirements
- BS . . . * Inductive proximity switches, cylindrical form (A)
(European standard — CENELEC EN 50 008)

3. Definitions

Part 1 applies.

4. Complete switch

4.1 Description and design parameters. 4.1.1 to 4.1.12 of Part 1 apply; in addition, the requirements of 4.1.13 and 4.1.14 in this Part shall be met.

4.1.13 Switches shall operate by the emission of an electro-magnetic field which will be changed in magnitude or phase by the presence of a target. These changes will cause switching of an electronic circuit which may be amplified separately by an associated electronic module or relay.

4.1.14 Overtravel of the target in each intended direction of operation after the switching action has occurred shall not be less than 20 % of the distance from the sensing face to the operating position and shall be declared by the manufacturer.

4.2 Marking. Part 1 applies.

4.3 Electrical and mechanical rating and life. The electrical rating at 28 V d.c. resistive load shall be designed to be at either of the following standard values: 25 mA or 200 mA at this rating; the switch shall satisfy the endurance test of Part 1, table 4.

4.4 Environmental conditions. Part 1 applies (see also 9.16 and 9.17).

4.5 Sealing. Part 1 applies.

4.6 Explosion proofness. Part 1 applies.

4.7 Magnetic influence. Part 1 applies.

4.8 Electromagnetic interference. Part 1 applies.

4.9 Supply voltage variation. Part 1 applies.

4.10 Dimensions and mounting methods. The preferred fixings and maximum envelope sizes for cylindrical types should be as shown in BS . . . * (European standard — CENELEC EN 50 008). Rectangular envelopes may be required for special applications, but are not the subject of preferred envelope sizes in this Part of the standard.

4.11 Overall response time. Part 1 applies.

4.12 Switching arrangements. Part 1 applies.

The output circuit shall be suitable for switching an inductive current of either 25 mA or 200 mA at 28 V. With a load resistance of 1 Ω , the residual current shall not exceed either 100 μ A or 1 mA respectively for a nominally zero output.

4.13 Positive line switching. Part 1 applies.

4.14 Circuit protection. Part 1 applies.

Unless in-built short circuit protection is provided, the switch shall be designed to meet the test requirements specified in 9.9 in this Part of the standard.

4.15 Magnetic debris. Part 1 applies.

4.16 Non-magnetic materials. Part 1 applies.

4.17 Cable length. Part 1 applies.

4.18 Interchangeability. Part 1 applies.

4.19 Reliability. Part 1 applies.

5. Target

5.1 General. Part 1 applies if aircraft structure is not used as target.

5.2 Mechanical. Part 1 applies if aircraft structure is not used as target.

5.3 Electrical. Part 1 applies if aircraft structure is not used as target.

6. Sensor

6.1 General. Part 1 applies except that the preferred arrangements of 4.10 of this Part of the standard also apply.

6.2 Mechanical. Part 1 applies.

6.3 Electrical. Part 1 applies.

7. Associated relays or electronic modules

7.1 Relay. Part 1 applies.

7.2 Electronic module. Part 1 applies.

7.3 Electrical connections. Part 1 applies.

8. Tests

8.1 Nature and order of tests. Part 1 applies.

8.2 General test requirements. Part 1 applies.

9. Type tests

9.1 Allocation of switches for type tests. Part 1 applies.

9.2 Weight (mass). Part 1 applies.

9.3 Mechanical calibration. Part 1 applies.

9.4 Mechanical strength of terminations and mountings. Part 1 applies.

* In course of preparation.