
International Standard



461/1

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Aircraft — Connectors for ground electrical supplies — Part 1: Design, performance and test requirements

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 461/1 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

Together with ISO 461/2, it cancels and replaces ISO Recommendation R 461-1965, of which it constitutes a technical revision.

Aircraft — Connectors for ground electrical supplies — Part 1: Design, performance and test requirements

1 Scope and field of application

This part of ISO 461 specifies the design, performance and test requirements for electrical connectors used to supply electrical power from a ground source to an aircraft.

NOTE — ISO 461/2 specifies the dimensions of the connectors.

2 References

ISO 461/2, *Aircraft — Connectors for ground electrical supplies — Part 2: Dimensions*.

ISO 7137, *Aircraft — Environmental conditions and test procedures for airborne equipment*.¹⁾

3 Definitions

For the purposes of this part of ISO 461, the following definitions apply.

3.1 aircraft fixed connector (receptacle): The connector installed in an aircraft, which accepts an electrical power supply via the ground supply free connector from an external ground source.

3.2 ground supply free connector (plug): The connector fitted to cables from the external ground source of electrical power, which, when properly fitted to the aircraft fixed connector, permits an electrical supply to be passed to the aircraft.

4 Design and performance requirements

4.1 General

4.1.1 The ground supply free connector shall be robust in construction and capable of withstanding heavy mechanical

shocks and hard wear in use, and shall be designed to provide safe handling, for example by the avoidance of sharp edges.

4.1.2 Aircraft fixed connectors and ground supply free connectors shall be capable of engagement, disengagement and operation at ambient temperatures between -65°C and $+65^{\circ}\text{C}$. They shall be capable of operating at 105°C , allowing for the temperature rise due to current carried by the connectors.

4.2 Polarity or phase sequence

Indications of polarity or phase shall be permanently marked on the aircraft fixed connectors and the ground supply free connectors at points adjacent to the contacts, as indicated in the relevant figures in ISO 461/2. The markings shall be recessed and shall be marked on the front and rear of the insert of the aircraft fixed connector.

4.3 Current ratings

4.3.1 Each of the main current-carrying male and female contacts of the fixed and free connectors (as distinct from any cables connected to them) shall be capable of carrying the following currents (direct current or r.m.s. alternating current):

- 450 A continuously (i.e. for 1 h or more);
- 1 500 A for 1 min.

4.3.2 Each of the control male and female contacts shall be capable of carrying 35 A continuously.

4.4 Control current female contact

The control current female contact of the d.c. ground supply free connector shall be in two sections, insulated electrically from each other, connected only by the entry of the control male contact of the aircraft fixed connector.

1) Endorsement, in part, of the publication EUROCAE ED-14A/RTCA DO-160A (a document published jointly by the European Organisation for Civil Aviation Electronics and the Radio Technical Commission for Aeronautics).