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**Aircraft — Ground support electrical  
supplies — General requirements**

*Aéronefs — Alimentations électriques de service au sol des avions —  
Conditions générales requises*



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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 1, *Aerospace electrical requirements*.

This second edition cancels and replaces the first edition (ISO 6858:1982), which has been technically revised.

The main changes compared to the previous edition are:

- updated normative references, definitions and figures;
- new information regarding aircraft electrical load characteristics, facility capacity requirements and ac power types;
- updated protection and safety requirements; and
- addition of new Annex A and B with acceptable test listings for ac and dc systems respectively.

## Introduction

The purpose of this document is to foster compatibility between the providers, distributors and users of aircraft ground support electrical power. This update takes into account several recent trends in aircraft electrical systems, including increase in nonlinear load content on aircraft.

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# Aircraft — Ground support electrical supplies — General requirements

## 1 Scope

This document specifies the electrical output characteristics and interface requirements between an aircraft and ground support electrical supplies. This includes all external electric power generation facilities, provided as part of a central source or in point-of-use application. Requirements for safety features are also included. Performance and safety issues under regional control are not addressed in this document. Requirements for ground traffic control purposes, such as towing points, identification and warning lights, etc. are also excluded.

The electrical characteristics relate to nominal 28 V DC and either 115/200 V or 230/400 V three-phase, 400 Hz AC outputs measured at the aircraft attaching connector as indicated in [Figure 1](#).

## 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.

ISO 461-1, *Aircraft — Connectors for ground electrical supplies — Part 1: Design, performance and test requirements*

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

ISO 1540, *Aerospace — Characteristics of aircraft electrical systems*

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

ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 12384, *Aerospace — Requirements for digital equipment for measurements of aircraft electrical power characteristics*

ISO 13850, *Safety of machinery — Emergency stop function — Principles for design*

IEC 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 61140, *Protection against electrical shock — Common aspects for installation and equipment*

## 3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 1540 and ISO 461 and the following apply.

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

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **alternator speed**

nominal speed at which the alternator operates to produce 400 Hz