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**Aircraft — Auto-transformer  
rectifier units (ATRU) — General  
requirements**

*Aéronefs — Autotransformateurs-redresseurs (ATRU) — Exigences  
générales*



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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 of 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 [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*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document provides general requirements for auto-transformer rectifier units (ATRU) installed in aircrafts.

ATRU can convert electrical power from alternating current (AC) to direct current (DC) by using multipulse phase shifting auto-transformers to provide cancellation of certain harmonic currents.

ATRU have been shown to be the most cost-effective harmonic solution in aviation industry with minimum mass, simpler structure and higher reliability, compared with conventional harmonic suppression devices. ATRU are emerging among aircraft application, especially in more electrical aircraft and all electrical aircraft power supply system.

There are no International Standards on ATRU, and standardization is needed for aircraft electrical systems. This document provides the basis for manufacturers and users that develop and utilize ATRU installed in aircrafts.

# Aircraft — Auto-transformer rectifier units (ATRU) — General requirements

## 1 Scope

This document specifies the general requirements and test methods for auto-transformer rectifier units (ATRU) for use in aircraft electrical systems.

This document is mainly applicable to ATRU of 18-pulse and 24-pulse types.

## 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 1540:2006, *Aerospace — Characteristics of aircraft electrical systems*

ISO 7137:1995, *Aircraft — Environmental conditions and test procedures for airborne equipment*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1540 and ISO 7137 apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

## 4 General requirements

### 4.1 Specification sheets

The individual item requirements shall be as specified in an applicable specification sheet. In the event of any conflict between the requirements of this document and the specification sheet, the latter shall govern.

### 4.2 Materials

#### 4.2.1 Selection of materials

The materials used shall enable the ATRU to meet all of the operational and environmental performance requirements of this document and the applicable specification sheet.

The materials used shall pass the requested certification in accordance with the applicable specification sheet.

#### 4.2.2 Metal materials

All metals used in ATRU construction shall be processed and protected to resist corrosion. The use of magnesium is prohibited unless specifically approved for each application by the qualifying activity.