



AEROSPACE STANDARD	AS1831™	REV. A
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Electrical Power, 270 VDC, Aircraft, Characteristics and Utilization of		

RATIONALE

AS1831A has been reaffirmed to comply with the SAE Five-Year Review policy.

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1. SCOPE:

This SAE Aerospace Standard (AS) establishes the characteristics and utilization of 270 V DC electric power at the utilization equipment interface and the constraints of the utilization equipment based on practical experience. These characteristics shall be applicable for both airborne and ground support power systems. This document also defines the related distribution and installation considerations. Utilization equipment designed for a specific application may not deviate from these requirements without the approval of the procuring activity.

1.1 Purpose:

The purpose of this document is to assure compatibility between aircraft electric systems or ground electric systems and airborne utilization equipment. See ARP4729 for recommended practices.

2. REFERENCES:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

ARP4729 Document for 270 Voltage Direct Current (270 V DC) System

3. DEFINITIONS:

3.1 AC CURRENT DEMAND:

The AC current demand is the non-DC component of current drawn by a load.

3.2 ABNORMAL OPERATION:

Abnormal operation occurs when a malfunction or failure in the electric system has taken place and the protection devices of the system are operating to remove the malfunction or failure from the remainder of the system before the limits for abnormal operation are exceeded. The power source may operate in a degraded mode for a defined duration where the power characteristics supplied to the utilization equipment exceed normal operation limits but remain within the limits for abnormal operation, before the protection devices are triggered.

3.3 DISTORTION FACTOR:

The distortion factor is the ratio of the voltage distortion to steady-state DC voltage.

3.4 DISTORTION SPECTRUM:

The distortion spectrum quantifies DC distortion in terms of the amplitude of each frequency component.

3.5 DISTRIBUTION SYSTEM:

The part of the electrical system used for conveying energy from the point of regulation of the 270 V DC source to the utilization equipment.

3.6 EMC (ELECTROMAGNETIC COMPATIBILITY):

EMC is the capability of electronic equipment or systems to be operated in the intended operational electromagnetic environment at designed levels of performance while maintaining an acceptable level of emissions and maintaining an acceptable level of susceptibility.

3.7 INTERRUPTION SENSITIVE LOADS:

Loads that cannot maintain normal operations during power interruptions longer than 50 μ s.

3.8 NORMAL ELECTRIC SYSTEM OPERATION:

Operation of the primary electrical system including all the functional electric system operations required for vehicle operation and mission support in the absence of an electric system failure. These operations occur at any given instant and any number of times during flight preparation, take-off, airborne conditions, landing, and anchoring. They include all system functions required by all phases of aircraft operation, except during the electric starting of the propulsion engine, when required.

3.9 OVERVOLTAGE AND UNDERVOLTAGES:

Overvoltage and undervoltage are those voltages which exceed the normal limits.

3.10 POINT OF REGULATION (POR):

That point in the system where voltage is sensed and referenced for voltage regulation, usually the source side of the 270 V DC bus power contactor.