

Supplement for Strapdown Applications to IEEE Standard Specification Format Guide and Test Procedure for Single- Degree-of-Freedom Rate-Integrating Gyros

Sponsor

Gyro and Accelerometer Panel
of the
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Foreword

(This Foreword is not a part of IEEE Std 529-1980, Supplement for Strapdown Applications to IEEE Standard Specification Formal Guide and Test Procedure for Single-Degree-of-Freedom Rate-Integrating Gyros.)

This standard was prepared by the Gyro and Accelerometer Panel of the Aerospace Electronics Systems Society of the Institute of Electrical and Electronics Engineers. It is a supplement to IEEE Std 517-1974 (R1980), Standard Specification Format Guide and Test Procedure for Single-Degree-of-Freedom Rate-Integrating Gyros, which consists of two parts.

Part I of IEEE Std 517-1974 (R1980) is a specification format guide for the preparation of a rate-integrating gyro specification. Part II is a compilation of recommended procedures for testing a rate-integrating gyro.

The paragraphs in this supplement are to be used in substitution for or in addition to comparable paragraphs of IEEE Std 517-1974 (R1980). The numerical identification should make it readily apparent when a paragraph is substituted or added; a User's Cross Reference has also been included. The supplement contains additional performance requirements and tests which should be specified for a single-degree-of-freedom rate-integrating gyro when it is used as a strapdown sensor in operating environments typical of aircraft and missile applications.

This supplement applies to both parts of IEEE Std 517-1974 (R1980) and must be used in conjunction with both Parts I and II. The format of the supplement is the same as that of IEEE Std 517-1974 (R1980), and the same use is made of blank spaces, brackets, and boxed comments. Refer to the Foreword in that standard for guidelines on their use. The terminology used conforms to the gyro terminology that is contained in ANSI/IEEE Std 100-1977, Standard Dictionary of Electrical and Electronics Terms.

This supplement, when combined with IEEE Std 517-1974 (R1980), defines the requirements and test procedures in terms of characteristics unique to the gyro or those applications in which the dynamic angular inputs are significantly greater than the limitations identified in IEEE Std 517-1974 (R1980). The strapdown rate-integrating gyro, because it is captured through an external loop using the gyro torquer, provides a voltage, current, or pulse train proportional to angular rate about the input axis. An example of a model equation containing the additional terms which describe the gyro in strapdown applications is contained in 6.3. The characteristics of the external capture loop are considered to the extent necessary to define the gyro performance, even though such a loop is not part of the gyro.

This standard represents a group effort on a large scale. A total of 111 individuals attended 26 meetings of the Gyro and Accelerometer Panel while this standard was in preparation.

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User's Cross Reference

This cross reference compiles the sections of IEEE Std 517-1974 (R1980) affected by the Strapdown Supplement. All of the supplement sections of IEEE Std 517-1974 (R1980) are indicated by an asterisk (*) and the sections of this supplement are listed as either superseding or providing additional information. The title of each subsection in this supplement is listed in the table of contents.

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Part I—Specification Format

1. Scope

This specification defines the requirements for a single-degree-of-freedom rate-integrating gyro to be used as a strapdown sensor for an [inertial navigation system, an attitude reference unit, _____] in an [aircraft, missile, _____] application. The characteristics of the external capture electronics are considered where necessary to define gyro performance.

2.2.2

- 1) ANSI/IEEE Std 100–1977, Standard Dictionary of Electrical and Electronics Terms.

3.2.2 Definitions

The following standard and the model equation of 6.3 define terminology used in this specification:

ANSI/IEEE Std 100–1977, Standard Dictionary of Electrical and Electronics Terms.