

JJF

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**Calibration Specification for Star Sensors
(English Translation)**

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Introduction

This specification is based on JJF 1071 "Rules for the Preparation of National Metrology and Calibration Specifications", JJF 1001 "General Metrology Terms and Definitions" the series of specifications are formulated based on JJF 1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement".

This specification is published for the first time.

Star sensor calibration specifications

1 Scope

This specification is applicable to the calibration of star sensors used in satellite navigation. Star sensors used in other spacecraft can refer to this specification.

implement.

2 References

This specification references the following documents.

GB/T 30111 General specification for star sensors ECSS-E-ST-60-20C Space engineering star sensor terminology and performance specifications for any referenced document with a date, only the version with the date is applicable to this specification; for any referenced document without a date, the latest version (including all amendments) shall apply to this specification.

3 Terminology and units of measurement the following terms and definitions defined in GB/T 30111 apply to this specification.

The center point of the front face of the star sensor sunshade is taken as the starting point, the vector pointing to the sun and the vector parallel to the optical axis of the star sensor are the angle between two vectors. Unit of measurement. (°).

The center point of the front face of the star sensor shield is taken as the starting point, and the vector pointing to the height of 100 km from the earth (the vector the measurement is the angle between the tangent line at an altitude of 100 km from the Earth and the vector

parallel to the optical axis of the star sensor.

Position. (°).

When the number of stars extracted and recognized by the star sensor is not less than 4, and the attitude efficiency is not less than 95% or the minimum value of the sunlight incident angle when the attitude measurement accuracy is met. When the attitude efficiency is not less than 95% (sunlight suppression the angle is called the function-guaranteed sunlight suppression angle, and the angle that satisfies the attitude measurement accuracy is called the accuracy-guaranteed sunlight suppression angle.

Angle. Unit of measurement. (°).

When the number of stars extracted and recognized by the star sensor is not less than 4, and the attitude efficiency is not less than 95% or the minimum value of the incident angle of the ground-air light when the attitude measurement accuracy is measured.

Note: When the attitude efficiency is not less than 95%, the (ground-air light incident angle) is called the function-protected ground-air light suppression angle.

When the measurement accuracy is guaranteed, the (ground air light incident angle) is called the ground air light suppression angle with guaranteed accuracy. Measurement unit. (°).

3.5 Solar constant

Outside the Earth's atmosphere, the total amount of light from the Sun on a plane perpendicular to the direction of the Sun's rays at a distance of one astronomical unit from the Sun.