



AEROSPACE STANDARD	AS5392™	REV. A
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Superseding AS5392		
Health and Usage Monitoring System, Rotational System Indexing Sensor Specification		

RATIONALE

HM-1 Committee reached consensus to stabilize AS5392 document at a previous meeting. Justification is that the documented standard does not reflect approach taken by HUMS suppliers. However, there is useful system functionality data which should not be lost via document cancellation.

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1. SCOPE:

This SAE Aerospace Standard (AS) specifies requirements for the interface between a rotational system indexing sensor and its interface electronics. These sensors generate one or more electrical pulses for each revolution of the shaft being monitored. These pulses can be used to determine the actual shaft rotational speed and/or position for use in a Health and Usage Monitoring System (HUMS). Indexing sensors are used in the following HUMS areas on the aircraft: (a) rotor track and balance, (b) engine vibration monitoring and diagnostics, (c) drive train vibration monitoring and diagnostics. The goal of this standardization effort is to be able to take any compliant indexing sensor and connect it to any compliant interface electronics.

These SAE HUMS Interface Specifications include the minimal interface and performance requirements for interoperability with the Rotorcraft Industry Technology Association (RITA) compliant HUMS. Compliance with these Interface Specifications can be referenced in more comprehensive procurement and device specifications.

1.1 Classifications:

Two general classifications of sensors are considered in this specification, those that are self-powered such as passive magnetic sensors and those that require an external source of power to operate such as optical sensors. This specification addresses the self-powered and externally powered sensors separately because of the significant differences in their interface requirements. While these two sensors types have very different outputs and are considered separately in this specification, a common electronic interface could be designed to accommodate both sensor types.

1.2 Specification Terminology:

The terms “shall” and “should” within this specification observe the following rules:

- a. The word “shall” expresses a mandatory requirement of the Specification.
- b. The word “should” expresses a recommendation or advice on implementing the specification or actions expected of users of the system.

2. REFERENCES:

There are no referenced publications specified herein.

3. DEFINITIONS:

SENSITIVITY - The ratio of change in sensor output as a result of a unit change in measurand.

SENSOR - A measurement device that transforms one form of energy into another. Also referred to as transducer or pickup.

TRANSDUCER - See Sensor.

4. REQUIREMENTS AND RECOMMENDATIONS:

This specification is divided into two major sections titled "Self-Powered Sensor Interface" and "Externally Powered Sensor Interface." The major sections specify the interface requirements for the two sensor types. Each of these major sections is further divided into two subsections titled "Sensor Interface Requirements" and "Interface Electronics' Interface Requirements." The major sections were divided into, the above mentioned, subsections to aid the supplier of the sensor or interface electronics in identifying the applicable requirements.

4.1 Self-Powered Sensor Interface:

Self-powered sensors are sensors that generate an electrical output signal without the use of batteries or an external power source. The most common self-powered sensor is the passive magnetic sensor. A description of passive magnetic sensors is provided in 5.2.1. The self-powered sensor typically produces a sinusoidal like voltage output.

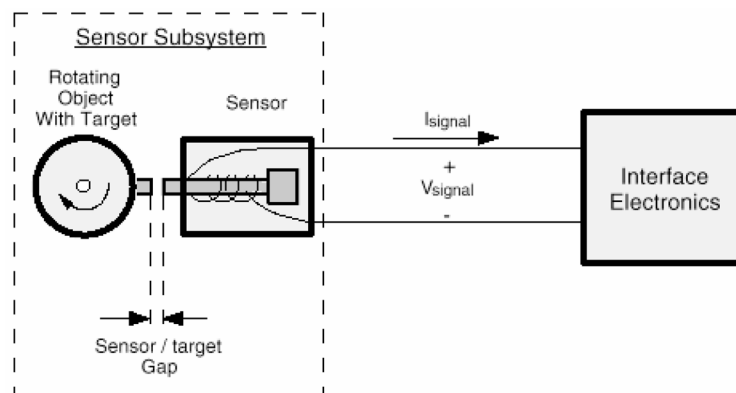


FIGURE 1 - Self-Powered Sensor Subsystem-to-Electronics Interface

4.1.1 The following subparagraphs provide interface requirements for the sensor side of the sensor-to-electronics interface.