

GAPS & HAPS SERIES

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Issue 1

Aerospace Proximity Sensors

DESCRIPTION

Honeywell has over 30 years' experience designing and delivering accurate and reliable proximity sensors that are currently used in a variety of military and commercial aircraft.

Honeywell has two new platforms of proximity sensors: **General Aerospace Proximity Sensors (GAPS)** and **Harsh Aerospace Proximity Sensors (HAPS)**, formerly known as the IHM Series. Both platforms incorporate Honeywell's patented Integrated Health Monitoring functionality, however the products have some technical differences that allow them to be used in various aerospace applications. GAPS can be used in less harsh areas of application with some differences of electrical and environmental characteristics when compared to HAPS. Whilst, HAPS Aerospace Proximity Sensors are configurable, non-contact, hermetically sealed devices designed to sense the presence or absence of a target in harsh-duty aircraft applications.

The GAPS and HAPS platforms provide on/off outputs and can be configured with an optional health monitoring output to the host system. The sensing mechanism is based on the familiar Eddy Current Killed Oscillator (ECKO) principles; however, Honeywell has designed and implemented the patented FAVCO (Fixed Amplitude Variable Current Oscillator) technology which enables the Honeywell sensors to have the health monitoring (IHM) features. See Figure 5 to compare the ECKO and FAVCO technologies. The GAPS and HAPS Series helps to reduce downtime and maintenance costs due to a unique circuit that can detect any internal failures and display a fault output instead of a false positive or false negative. For the customer, this delivers the best performance with a lower overall cost over the life of the aircraft.

FEATURES

- Industry-leading indirect lightning and dielectric ruggedness: Meets the increased requirements of today's composite aircraft and most challenging applications including landing gear, thrust reversers, and flight controls
- Enhanced vibration ruggedness: Capable of withstanding extremely high vibration applications
- Environmentally rugged: Fully hermetic packages provide long-term reliability in very harsh environments by eliminating the potential for contamination of the sensor from the application environment. In addition, Honeywell has developed an innovative method to environmentally seal wire-lead (pigtail) configurations
- Integral Health Monitoring Capability: Optional third output state to indicate the health of the sensor (whether it is healthy or failed). Reduces maintenance time, reduces delayed flights, and lowers overall maintenance cost across the life of the aircraft
- Non-contact design: Utilizes non-contact technology to sense the presence or absence of a target regardless of the dirty, harsh environment in which it is placed, eliminating mechanical failure mechanisms, reducing wear, minimizing downtime, increasing durability, and increasing reliability



VALUE TO CUSTOMERS

- Enhanced vibration and EMI specifications help to increase revenue (flight hours) and reduce cost to serve (system maintenance)
- Hermetic sealing helps increase revenue (flight hours), reduce cost to serve (maintenance), & reduce cost of goods (spares)
- Platform approach helps to increase revenue and reduce cost to serve
- Health monitoring helps to increase revenue, reduce cost to serve, and reduce cost of goods
- Supplier stability helps to reduce cost to serve (troubleshoot with original supplier)
- Current install base helps to reduce cost to serve (proven performance and MTBF)

PORTFOLIO



Honeywell's GAPS and HAPS Series is part of a comprehensive line of aerospace sensors, switches, and value-added solutions.

To view Honeywell's complete product offering, [click here](#).

Honeywell

AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES



GAPS | **GENERAL** Aerospace Proximity Sensor



HAPS | **HARSH** Application Proximity Sensor



Landing Gear
GAPS



Doors
GAPS



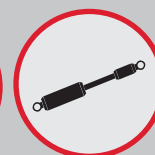
Hydraulics
GAPS



Primary Surface
GAPS



Rear Stabilizer
GAPS



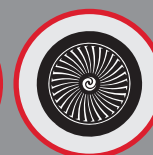
Gen Actuators
GAPS



TRAS
HAPS



Valves
HAPS



Engine
HAPS



Ground Vehicles
HAPS



Airframe
GAPS



Rotary Actuators
GAPS



Evacuation Slides
GAPS



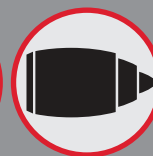
Cargo Storage
GAPS



Turbine Speed/ACM
GAPS



Actuators
HAPS



Nacelle
HAPS



Canopies
HAPS

GAPS

DIFFERENTIATORS

HAPS

500,000

MTBF > FLIGHT HOURS

500,000

MECHANICAL CHARACTERISTICS

115°C

OPERATING TEMPERATURE

115°C

20 G

VIBRATION

20 G*

40 G

OPERATING SHOCK

20 G

ELECTRICAL CHARACTERISTICS

150 mA Level W

RADIO FREQUENCY CONDUCTED SUSCEPTIBILITY

300 mA Level Y

100 V/m CAT F

RADIO FREQUENCY RADIATED SUSCEPTIBILITY

200 V/m CAT G

Level 3

LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY

Level 3

ON/OFF 20 mA

OUTPUT TYPE

IHM ON/OFF 250 mA

1000 Vdc/750 Vac

DIELECTRIC/IR

500 Vdc/500 Vac