

# LANDING GEAR SYSTEMS

Application Note

Utilized as a key component of landing gear, Honeywell HAPS and GAPS proximity sensors deliver excellent performance while helping to reduce downtime and maintenance costs.

## BACKGROUND

Landing gear is a crucial structure of the aircraft consisting of a main gear assembly and a nose gear assembly, which are exposed to high load, stresses, and harsh environmental conditions. During the take off and landing procedures, reliable operation and positioning of the landing gear assembly is crucial for the aircraft to safely land or continue in flight. Safety devices and position indicators are needed to provide communication to pilots of the landing gear position status. The extension and retraction position sequence of landing

gear can be controlled and monitored by proximity sensors to indicate it is fully in the uplocked or downlocked position and the wheel bin doors are closed or open. Proximity sensor status changes after the completion of an operation and the next operation is initiated.

Proximity sensors are also designed in each main landing gear assembly for Weight-on-Wheels (WoW) detection. This use is intended to prevent landing gear retraction while the aircraft is on the ground.



## GAPS/HAPS

Enhanced vibration and EMI specifications help to increase revenue (flight hours) and reduce cost to serve (system maintenance)

Vibration: GAPS, 20 G; HAPS, 90 G

Operating Shock:  
GAPS & HAPS: 20 G

Operating Temperature:  
GAPS & HAPS: 115°C

MTBF > Flight Hours:  
GAPS & HAPS: 500,000

Lightning Induced Transient  
Susceptibility: GAPS & HAPS: Level 3

Industry-leading indirect lightning  
and dielectric ruggedness

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Honeywell GAPS and HAPS Series Aerospace Proximity Sensors offer multiple configurations and options.

## FOR MORE INFORMATION

Honeywell Advanced Sensing Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit our [website](#) or call:

USA/Canada	+1 302 613 4491
Latin America	+1 305 805 8188
Europe	+44 1344 238258
Japan	+81 (0) 3-6730-7152
Singapore	+65 6355 2828
Greater China	+86 4006396841

## SOLUTION

Honeywell's General Aerospace Proximity Sensors (GAPS) and Harsh Aerospace Proximity Sensors (HAPS) are configurable, non-contact devices designed to sense the presence or absence of a target in aircraft applications such as landing gear systems. The sensors can detect most internal failures and display a fault output to a pilot or maintenance worker to help reduce aircraft downtime and maintenance costs.

Both GAPS and HAPS incorporate Honeywell's patented Integrated Health Monitoring (IHM) functionality, which can detect when a sensor has been damaged or otherwise impacted. This optional third output state indicates 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. These proximity sensors use Honeywell's patented sensing technology called FAVCO (Fixed Amplitude Variable Current Oscillator) that provides true "three-state" output – target near, far, fault detected.

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 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.

**Honeywell**  
**Advanced Sensing Technologies**  
830 East Arapaho Road  
Richardson, TX 75081  
[sps.honeywell.com/ast](http://sps.honeywell.com/ast)