SMART SENSING SYSTEM (S3) STRUCTURAL HEALTH MONITORING (SHM)

ON-DEMAND STRUCTURAL INTEGRITY AWARENESS

A light, scalable aid for aircraft inspection

Our Smart Sensing System Structural Health Monitoring (S3-SHM) integrates a Guided Wave-based structural damage detection system to enable total aircraft health management. Designed for ease of installation and durability, the S3-SHM can be permanently installed to aid in the inspection of hard to reach locations.

KEY FEATURES

- On demand non-destructive evaluation of structures
  - Sensor arrays provide on-demand or scheduled inspections
  - Reliable, repeatable and highly accurate evaluation of target structures
  - Collins Aerospace Pulse™ tablet-based ground applications provide sensor status, structural status and easy visualization of structure and fleet trends
- Real-time assessment of structural health: bird strike, contact from ground support or service equipment while on ramp, battle damage
- Hot spot monitoring: track history and current state of known problem areas related to corrosion or fatigue

KEY BENEFITS

- Improved safety and reliability
  - Detects cracks, holes, composite delamination, loose or removed bolts/rivets, corrosion, dents and strain
- Flexibility
  - The S3-SHM system can be installed as a stand-alone structural health system or can integrated with a Pulse™ Health Monitoring System (PHMS) vehicle health system

Pulse™ tablet
ground station

On-board system

PHMS

collinsaerospace.com
**SHM SYSTEM COMPONENTS**

**Pulse Tablet Ground Station (GS)**
- Off-board system used to interface with the PHMS
- Allows users to perform system configuration, reprogramming, acquisition command, BIT status and data management actions for the PHMS and the S3-SHM system
- The GS also serves as a means to analyze, display, trend and archive SHM and Health and Usage Monitoring System (HUMS) data

**Pulse Health Monitoring System**
- Central interface to seamlessly manage multiple S3-SHM system networks
- Coordinates all system functions, including system command and control, data storage, BIT processing and system software updates
- Interfaces with other sensor types for traditional health monitoring system capabilities
- Provides data-logging aircraft parametric data

**SPECIFICATIONS**
- Up to 512 GB flash memory
- Partitioned processing capable of hosting third party software
- Ethernet or USB data download/transfer
- S3-SHM weighs ~ 3 pounds
- PHMS LRU weighs ~1 pound
- Multiple arrays can be networked in distributed architecture to save wiring weight
- Designed for DO-178B DAL D certification

**COMPATIBLE TECHNOLOGIES**
- Collins Pulse Ground Station (tablet or PC)
- Collins Pulse drive train or subsystem health monitor system with diagnostics

---

**Representative installation of sensor array**