



## **ONBOARD VIBRATION MONITORING SYSTEM/HUMS**

Enhances safety, increases availability and reduces cost

# Onboard Vibration Monitoring System/HUMS

Selected by various OEMs, customers and military operators, all of our on-board systems are focused on the collection, processing and interpretation of data generated by the various components within an aircraft's drive train, including engines, gearboxes, shafts, fans, rotor systems, and other dynamic components. Collected data can be viewed at the aircraft, within the test cell or any other platform location by the maintainer. Hardware and software is available for more detailed analysis off-wing.



Onboard VXP

Honeywell's **Onboard VXP** health monitoring system has a firm track record. As one of the most field proven vibration products available, the VXP health monitoring system enhances safety through early detection of mechanical faults, reducing failures. The VXP reduces maintenance man-hours, provides maximum flexibility, supports system growth with proven reliability.



MSPU 1209

The **1209 Modern Signal Processing Unit** (MSPU) provides field-proven design and delivers specific, OEM-recommended maintenance actions to maintainers for rotor smoothing, engines and the entire drive train.

Advanced engine diagnostics and automated engine performance calculations, such as max power check (MPC) and Health Indicator Test (HIT), round out this feature-rich system. The system can connect to most commercial-off-the-shelf flight data recorders providing operators with crash survivable data storage. Based on the highly successful, combat proven



MSPU 1134

1209 MSPU, the models **1134/1239** are advanced health and usage monitoring systems (HUMS) featuring field programmable gate arrays (FPGA). With high processing speeds, the Models 1134/1239 can handle all of the diagnostics you need.

## Introducing the Next Evolution in Condition-Based Maintenance - RECON™

Honeywell is introducing the next-generation in (HUMS). Codenamed **RECON™** the system is designed for commercial and military helicopter operators and takes performance to a whole new level. RECON provides complete inflight drivetrain data acquisition, data processing and drivetrain diagnostics for complex aircraft, and does so eight times faster than its predecessor systems. This reduces flight-test data acquisition time by 85%. RECON also provides operators HUMS data where and when they need it – inflight, post-flight, in the hangar and at enterprise level, utilizing all the existing SW tools they are familiar with for previous generations' HUMS systems.



MSPU 1239



RECON™



**A faster, better, proven next-generation embedded diagnostic solution for helicopters, fixed wing aircraft, unmanned air vehicles, and ground vehicles.**

### Key Features and Functionality

#### Vibration Monitoring

- Greater than 90dB dynamic range
- Advanced rotor track and balance
- Event processing and recording
- Engine health monitoring
- Extensive use of open architecture hardware and software standards yield a low cost, easily upgradeable core system
- Automatically acquires data and continuously checks for pre-programmed exceedances
- Demonstrated advanced diagnostics for: rotor smoothing, absorbers (where applicable), drive train, turbine engines and gearboxes
- Companion web-based tools allow for remote software and diagnostic upgrades
- Compatible with existing industry software products, including: VXP Display Program, VibReview™, PC-GBS, iMDS Database Setup Tool and iMDS Server

#### Vibration and Health Usage Monitoring

- Advanced drive train diagnostics (CAP 753)
- Flight regime recognition
- Helicopter Operation Monitoring Program (HOMP/FDM/FOQA) support (CAP 753)
- Up to 128GB of compact flash (non-crash survivable) for vehicle or flight data recording
- Automated data acquisition using regime recognition software
- Unique software setup and configuration control methodology allows both the airborne and ground station software to be updated remotely

#### KEY BENEFITS



##### ENHANCES SAFETY

A proactive approach minimizes accidents before they happen. Data signaling potential problems on one aircraft can be used to comprehensively analyze an entire fleet.



##### INCREASES AVAILABILITY

Cut down on scheduled maintenance by up to 10%. Better maintenance planning means less unplanned downtime, faster turnaround and increased mission readiness to support the warfighter.



##### REDUCES COSTS

Reduce test flights by up to 20% and reduce inflight cancellations by up to 30%. CBM substantially cuts maintenance/operating costs in the near term and over the life cycle of the aircraft and avoids costs of spares usage, dedicated test flights and asset recapitalization.

	ONBOARD VXP	MODEL 1209	MODEL 1134	MODEL 1239	RECON**	
					CONFIGURATION	COMMENTS
ACCELEROMETERS (SIMULTANEOUS MEASUREMENT)	26 (6)	36 (6)	24* (6)	48 (8)	24 (24)	Includes 3 high temp charge accelerometers
TACHOMETERS / TRACKERS	4 /4	8/2	5*/1	10/2	8/1	8 (up to 25kHz); supports autodetection of tracker type
GENERAL PURPOSE ANALOG & DISCRETE IN		8	32	48	13/8	Programmable pull up/pull down and thresholds; used for RT address or other customer strapping
GENERAL PURPOSE DISCRETE OUT (LOW/HIGH)			0/2	16/4	8/5	Configurable as either differential or single ended; 2 amp
DIGITAL COMMUNICATION						
USB			1	2	3	USB 2.0
CAN			1*	1	1	ISO 11898-1 CAN specification 2.0
ETHERNET (10/100/1000)			2	4	2	1 ground station, 1 parametric monitor
POWER OVER ETHERNET					3	Supports upto 3 PoE devices. (note must remain within overall power budget)
RS232 / 422 / 485		1	2	4	4	Configurable serial port
ARINC 429 TRANSMIT/RECEIVE			1/2	2/4	3/9	Configurable low and high speed ARINC 429
ARINC 717 (TX/RX)					1/1	
MIL-STD-1553B DUAL REDUNDANT BUSES			1 (OPTIONAL)	4	2	Dual redundant transformer coupled interfaces
INTERNAL STORAGE (STANDARD /OPTIONAL)	512MB	128MB	512MB / 8GB	512MB / 8GB	96 GB	32 GB per module
COCKPIT CONTROL HEAD (CCH)					OPTIONAL	Fully supported
QUICK ACCESS RECORDER (NOT CRASH SURVIVABLE)	-	-	OPTIONAL	OPTIONAL	OPTIONAL	Fully supported
DIMENSIONS:						
L X W X H INCHES (WITH MOUNTING PLATE)	12.2 x 7.1 x 3.0	3.0 x 5.75 x 7.575	7.6 x 6.2 x 1.8	8.8 x 4.7 x 2.5	9.5 x 7.25 x 3.3	Not including connectors
L X W X H MM (WITH MOUNTING PLATE)	304 x 180 x 76	76 x 146 x 192	193 x 158 x 46	224 x 119 x 64	241 x 184 x 84	
WEIGHT (W/O MOUNTING PLATE)	6.2 lbs / 2.82 kg	4lbs 5oz / 1.95 kg	2.5 lb / 1.13 kg	4.0 lbs / 1.81 kg	6.4 lbs/2.9 kg	Replaceable mounting plate typically also required
TEMPERATURE (DEGREES C)	-30 to +60	-20 to +55	-40 to +71	-40 to +71	-40 to +71	
SOFTWARE: RTCA/DO-178B			LEVEL E	LEVEL D	LEVEL D	
REGULATIONS:						
CAP-739 (FDM), HOMP/FOQA			LIMITED	YES	YES	
JAR-OPS3			YES	YES	YES	
CAP-753 (VHM)			YES	YES	YES	

\*Reconfigurable options using internal jumper selection. Total number is dependent on jumper configuration.

\*\* Specifications provided are for RECON standard configuration. RECON is scalable and modular and therefore can scale up to 48+ accelerometer channels (with other specs scaling accordingly) or scaled down to provide weight and cost reductions as needed.

## Customer Support

Honeywell is dedicated to supporting our customers' needs. Our worldwide customer service is available via phone, fax or e-mail. We can help your organization improve skills in component balancing, engine testing, rotor smoothing, troubleshooting, and data management.

Training courses are provided for all products at the user level and advanced fleet administration/analyst level. Of course, service includes equipment repairs and calibration, for which we have expert in-house teams. Honeywell International representatives support over 180 countries.

### Find out more

Visit us online at: [aerospace.honeywell.com/HUMS](http://aerospace.honeywell.com/HUMS)  
or contact us at the following email address:  
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