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# VXP HUMS

Honeywell


**Enhances safety, reduces cost of ownership, and delivers the most advanced technologies**

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# Aircraft Health Monitoring System

The Honeywell's VXP Health Monitoring System represents more than 50 years of experience and is one of the latest in the Honeywell Health & Usage Monitoring Systems (HUMS) product lines. It is the most advanced Aviation Vibration Health Monitoring System available on the Market and represents a merging of On-Board System and Ground-Based Technologies.

The VXP is fully certified and available via STC's and PMA's and not only meets the current regulatory requirements but also has provisions to support future HUMS functions. In addition, the system enhances safety through early detection of mechanical faults preventing catastrophic failures. The VXP provides a dramatic reduction in maintenance man-hours, maximum flexibility, and the latest advancements in technology, system growth, low costs, proven reliability and existing Honeywell world-renowned customer support.

## VXP Benefits

- Light weight and quick download (30 seconds)
- On-Board vibration diagnostics to provide actionable maintenance information at the aircraft
- Continuous monitoring without human intervention versus "snap shot" data collection
- Integrated Track & Balance Data to provide the most advanced T&B solution with expanded Smart ChartTM technology
- Comprehensive ground support software tools available for flight crews, maintainers, and engineers with capabilities to interface with operators' maintenance system

## STC and Installation Capability

Honeywell is offering products that are available today. We also provide an application organization that has broad experience in conducting VXP installation support and training on the majority of aircraft types. Honeywell has previously conducted VXP STC installations on numerous aircraft types, including Sikorsky S-61N/L, S-76A++, S-76C/C+, Bell 206L, Bell 212, Bell 412, Bell 407, Bell 427, Bell 430, A109 and AS-365N1/2/3 aircraft.

## System Components

The VXP System consists of the VXP Acquisition Unit (AU), VXP Display Unit (DU) and software. The VXP System interfaces to hardwired vibration and tachometer sensors located on the aircraft. In addition, it interfaces to optional equipment such as the FasTrak™ Optical Tracker for Main Rotor blade tracking. The software for the VXP is divided into two major systems. The first is the VXP Operational Program, which resides permanently in EPROM memory of the VXP AU. The second is support software that resides on the VXP DU such as VXP Display Program, Vib Review™ Trending Software, and advanced Predictive Maintenance Software (VibraLog™). All data is date time stamped and can be correlated to other aircraft data systems (i.e., FDR / HOMP).

## Growth and Expansion

Products that are relatively new to the industry often require frequent changes to comply with rapidly changing protocols, mandates and requirements. Honeywell's VXP's are specifically designed to support upgrades as they occur and supported by robust and user-friendly ground support equipment and software tools.

## Functions and Capabilities

All of the Honeywell HUMS products 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. In all cases, vibration spectra can be viewed in the field at the engine, test cell or platform location. The data collected is retained to allow more detailed analysis at an IBM® - compatible personal computer (PC).

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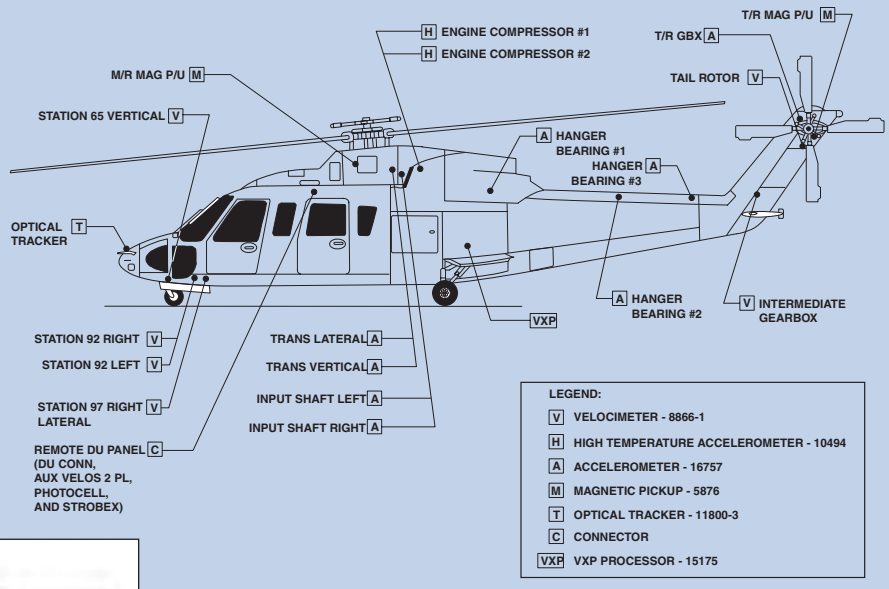
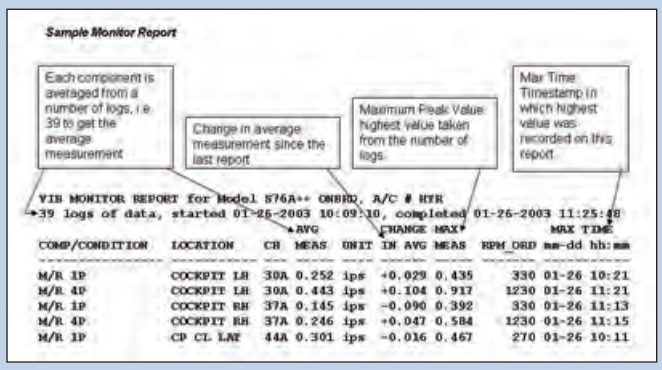
## Continuous Component Monitor

The VXP Monitor functions provides full-time vibration monitoring of all critical rotating components during flight. At the end of the flight, a clear concise Monitor Report is generated. All of this is performed by the VXP AU on the aircraft.




## Vib Review™

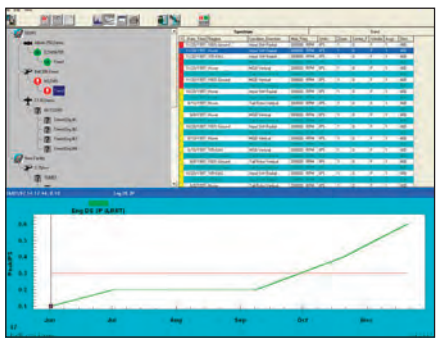
The Vib Review™ is an easy to use importing, trending and alerting software tool. The tool installs on the VXP DU and, in one step, downloads directly from the VXP AU to provide reports and trend information at the aircraft.

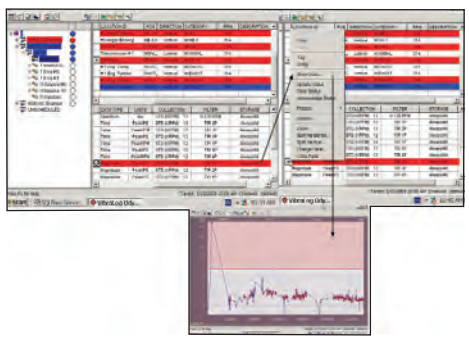
## VibraLog™

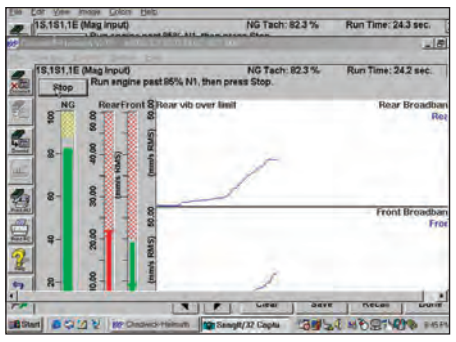
VibraLog™ provides a comprehensive Fleet Management and Predictive Maintenance capability for the VXP Aircraft Systems.

## Engine Vibration

The VXP performs engine acceleration and deceleration tests with unmatched flexibility, simplicity and accuracy. It implements broadband and narrow-band tracking filters using precise digital signal processing techniques.

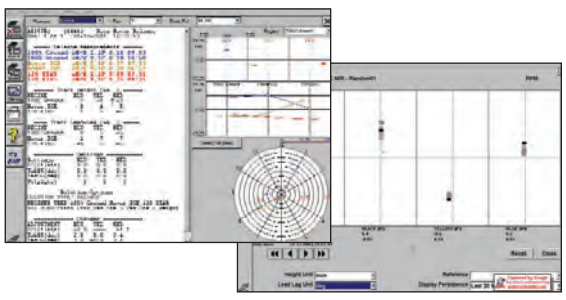







## VXP Maintenance Tool

The VXP provides many other features and functions to aid Maintenance Personnel. Some of these features include Rotor Track and Balance, Damper Diagnostics and Advanced Vibration troubleshooting.



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# Specifications

## Acquisition Unit Balance Measurements

| | |
|---|---|
| Amplitude accuracy: | +/- 2% |
| Phase resolution: | 1 degree |
| Frequency range: | 180 to 60,000 RPM |
| Harmonics: | 1 to 5 |
| Simultaneous channels: | 4 vib., 1 azimuth, 1 FasTrak™ |
| Vector operations: | A, (A+B)/2, (A-B)/2 |

## Track Measurements with FasTrak™

| | |
|---|---|
| Track height accuracy: | +/- 2 mm |
| Lead lag accuracy: | +/- 0.5 mm |

## Spectrum

| | |
|---|---|
| Frequency ranges: | 0-20 Hz to 0-75 KHz |
| Frequency resolution: | 400 to 51,200 lines |
| Zoom: | Yes |
| Window types: | Flat-top, Hanning, Kaiser-Bessel, Uniform |
| Simultaneous channels: | 4 vib., 1 azimuth |
| Dynamic Range: | >90 dB |
| Averaging: | Linear, Peak hold |

## Filters

1 to 8 simultaneous filters (any combination of broadband and tracking filters allowed)

## Interfaces

- Magnetic Pickup/Photocell, 4 ea • Tachometer, 4 ea
- Photoprobe (high speed), 2 ea • Velocimeter, 16 ea
- Accelerometer, 26 ea • Accelerometer (charge), 6 ea
- Discrete Signal I/O, 6 ea • Strobex, 1 ea • FasTrak™, 1 ea
- Serial Interface, 3 ea • Cockpit Control Unit, 1 ea
- PCMCIA Type 1, 2 Card Slot • Ethernet
- Internal aircraft databus interface slot

## Processing

32 Bit Microprocessor (CPU)
Digital Signal Processor (DSP)
RISC based Time Processor Unit (TPU)

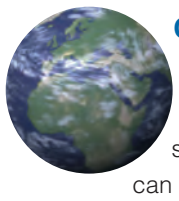
## Physical

| | |
|---|---|
| Dimensions: | 7.1 W x 3.0 H x 12.2 D (inches)<br>180 W x 76 H x 304 D (mm) |
| Weight: | 6.2 lbs., 2.82 kg |
| Power requirement: | 18 to 32 VDC |
| Operating temperature range: | -30 to +60°C |
| Storage temperature range: | -55 to +85°C |

## VXP Display Unit

| | |
|---|---|
| Dimensions: | 10.7 W x 1.9 H x 8.5 D (inches)<br>272 W x 48 H x 216 D (mm) |
| Weight: | 4.5 lbs., 2.0 kg |
| Power requirement: | 16 VDC (supplied by AU) |
| Processing: | Pentium® M Centrino™ Mobil Technology, 400 MHz |
| Display: | Color Active Matrix, Sunlight readable tablet PC |
| Pointing devices: | Touch pad and touch screen |
| Disk drive capacity: | 40 GB |
| Memory: | 256 MB |
| Interfaces: | RS-232, USB, PCMCIA Type 1, 2 |

Honeywell reserves the right to change specifications without notice. Centrino and Pentium are trademarks of the Intel Corp., Windows is a trademark of Microsoft Corp.



## 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 the VXP 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.

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